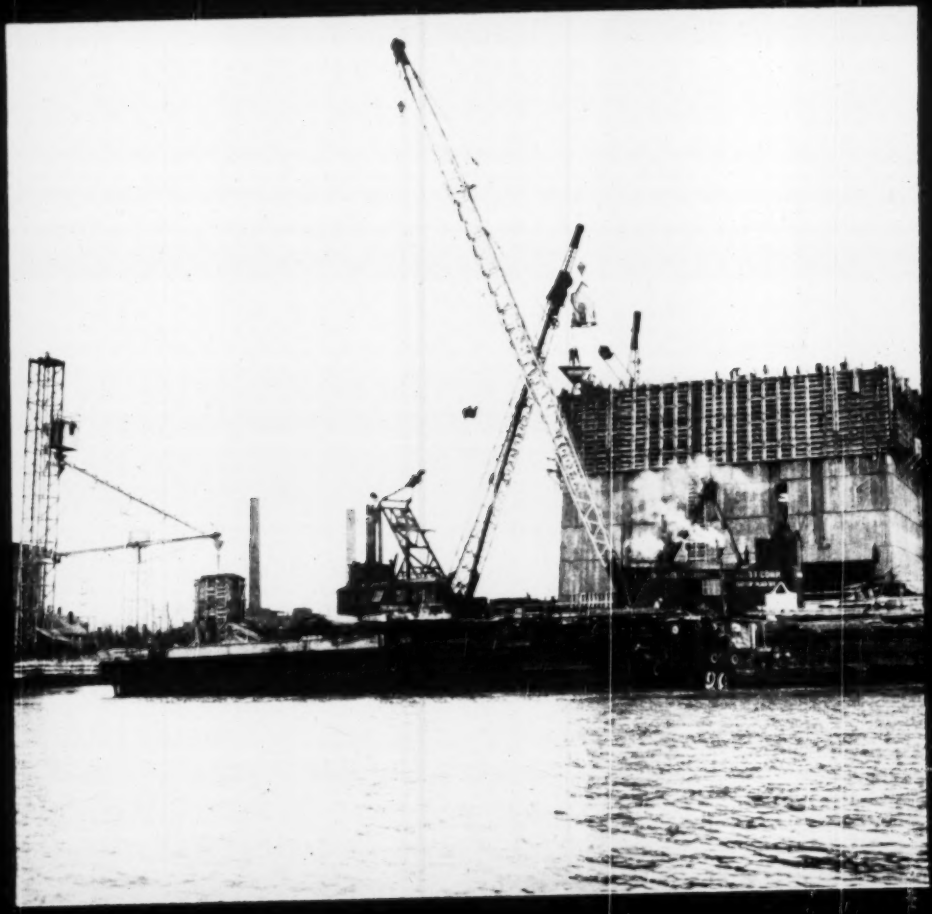
ENGINEERING NEWS-RECORD



★

★

A McGRAW HILL PUBLICATION

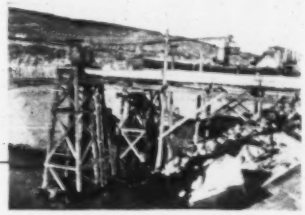
pushing the SWIFT COLUMBIA aside ... Electrically

McNary Dam Contractors depend on General Electric equipment to make a success of "the toughest river diversion ever undertaken."

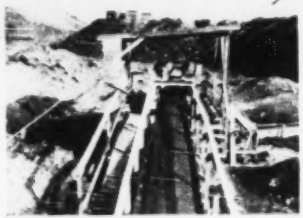
The 1953 deadline for initial generation of power at the McNary Dam project makes it an unprecedented "race against high waters." Making this deadline is a necessary step towards the alleviation of the acute power shortage in the Northwest. Because of this, the whole construction world is carefully watching the work that leads to the beginning of closure sections operations next fall. To meet this tough schedule, contractors working under contracts with the Corps of Engineers are relying on *electric drives* supplied and co-ordinated by General Electric.

Construction equipment, driven by G-E motors and control, and supplied from G-E distribution systems, will help meet your schedules with a maximum of safety, economy, and ease of maintenance. *Apparatus Dept., General Electric Co., Schenectady 5, N. Y.*

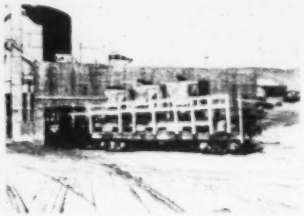
1. This G-E powered shovel handles 5 cubic yards of rock excavation with every bite. Operating from the 2400-volt a-c system, it responds instantly to the operator's touch, is easy to maintain despite rough usage.



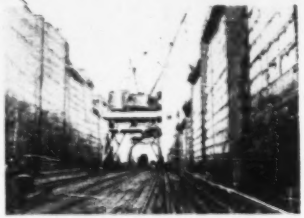
5. Deep-well pumps keep leakage from flooding the construction area. The same large Tri-Clad vertical motors driving these pumps have done yeoman service for the contractors on many previous jobs.



2. Five classes of aggregate are moved from stockpiles to batch plant on belt conveyors like this. G-E motors drive and G-E controls protect these crucial links in the concreting operations at McNary.



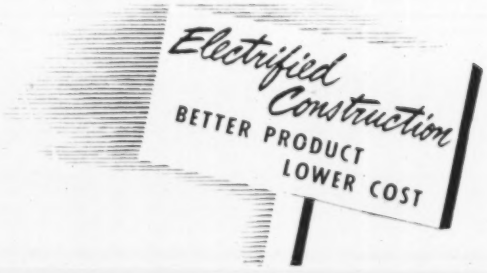
3. Four 25-ton G-E industrial locomotives (dinkies) move concrete—three 4-yard buckets at a time—from batch plant along a 675-foot wooden trestle at just the speed demanded by the schedule.



4. Two giant electrified revolving gantries remove buckets from railroad dinkies and place concrete in the world's highest single-lift navigation lock. Both cranes are driven by General Electric hoisting systems.

Ask him Today!

Whether you buy or build construction equipment, your G-E representative can show you how to do a better job—at lower cost—by complete electrification. Write him now, and he'll call on you at your convenience.



GENERAL ELECTRIC

664-8

Need Standard Bolts for Construction?

WE MAKE THEM IN ALL TYPES and SIZES— PLAIN or GALVANIZED

Standard bolts are products of Bethlehem's Lebanon, Pa., plant

BETHLEHEM STEEL

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On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

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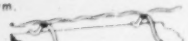
Other Bethlehem Construction Fastenings TIE-RODS • SPIKES • TIMBER BOLTS RIVETS AND RIVET-BOLTS • NUTS • TURNBUCKLES • CLEVISES • SPECIAL BOLTS

RICHMOND
REINFORCING STEEL ACCESSORIES

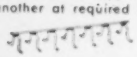
SLAB BOLSTER to support lower slab steel from form.



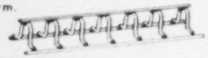
SLAB BOLSTER WITH PLATE to support lower slab steel on fill.

SLAB SPACER to support and space lower slab steel.

SLAB BOLSTER-UPPER to support one layer of steel above another at required distance.



BEAM BOLSTER to support lower beam steel from form.

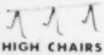


BEAM BOLSTER-UPPER to support layers of steel, one above the other.

BAR CHAIRS to support wide spaced light steel in slab construction.

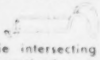
HIGH CHAIRS to support upper slab steel.

SPECIAL HIGH CHAIRS to support upper slab steel from lower mat steel.



CONTINUOUS HIGH CHAIRS to support upper slab steel from form without carrier bars.

TY-CHAIRS to tie intersecting reinforcing bars and support them above the form.



BAR-TYS to tie intersecting reinforcing bars, horizontally or vertically.

MANUFACTURERS of
ENGINEERED TYING DEVICES,
ANCHORAGES and ACCESSORIES
for CONCRETE CONSTRUCTION

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ENGINEERING NEWS-RECORD

Volume 144 APRIL 20, 1950 No. 16

WALDO G. BOWMAN
Editor

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SOFT SHOULDER or BLOWOUT doesn't mean Disaster

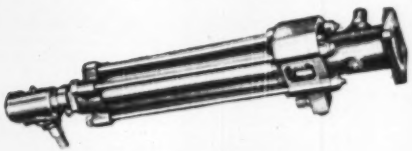
When You Have VICKERS Hydraulic POWER STEERING

There's less hazard when forced off the road onto soft, rocky, rutted or snow banked shoulders . . . when you have Vickers Hydraulic Power Steering. The steering mechanism is hydraulically locked against any road condition reaction. The vehicle can't swerve from road reaction. There's no "wheel fight" to wrench the steering wheel out of the driver's hands. Pull-back onto the road requires only a trigger-pull on the steering wheel.

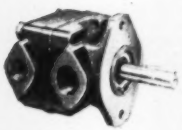
Vickers Hydraulic Power Steering is safer . . . effortless . . . provides hydraulic power at instant command of the driver to meet any steering requirements. This extra-quick steering increases the ability to maneuver in emergency. The driver is less tired, more alert.

Vickers Hydraulic Power Steering can be used as original equipment, or adapted to most trucks and other vehicles now in service. Write for Bulletins 47-30 and 49-52 covering further details and specifications.

VICKERS
HYDRAULIC POWER STEERING
is Effortless, Positive, Shockless



Vickers Hydraulic Steering Booster with Integral Overload Relief Valve. Bulletin 47-30a.



Vickers Balanced Vane Type Pump is Engine Driven, Bulletins 36-12 and 49-52.

VICKERS Incorporated
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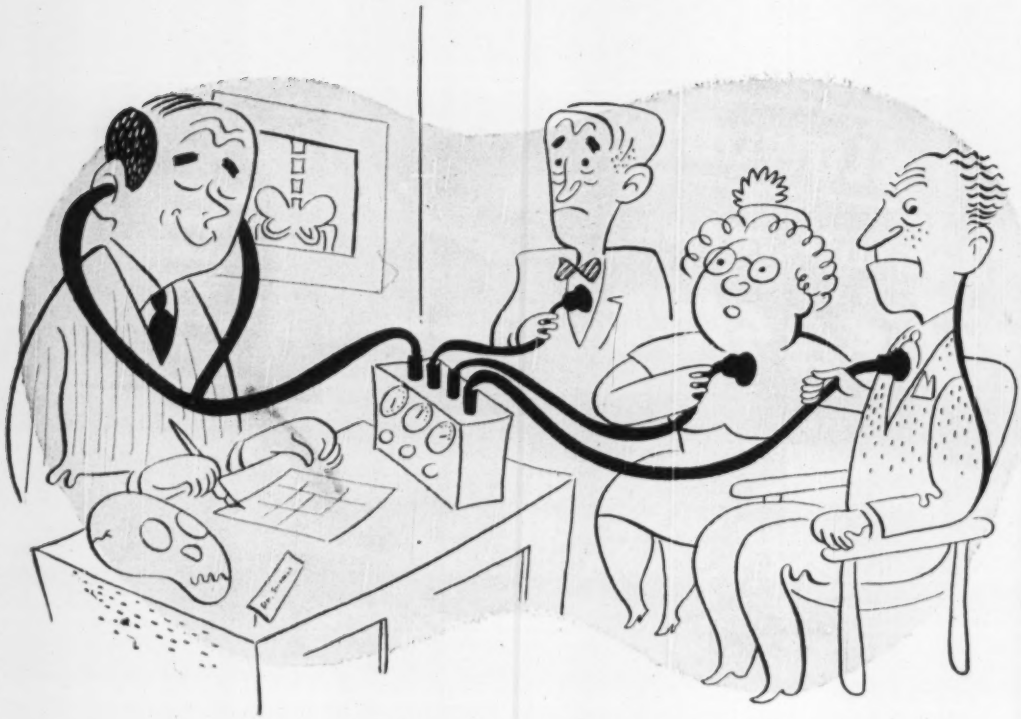
ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921



Reduced Treatment Costs

Less load at the disposal plant—and, therefore, a reduction in sewage treatment costs—is one of the practical advantages that often result from the use of Transite* Sewer Pipe.

There are two good reasons for this:

(1) Transite's special sleeve-type joints that cut sewer line infiltration to a minimum.

(2) Transite's long 13-foot lengths that reduce the number of joints in the line—an additional safeguard against infiltration.

Besides the immediate saving in treatment costs, this reduction in load also enables plant capacity to be conserved for future needs. And, where new treatment facilities are planned, it permits consideration of a smaller plant . . . with possible important economies in disposal equipment.

Other Transite Economies . . . Transite has an exceptionally smooth interior that reduces resistance to flow. This, combined with its long lengths that help maintain uniform grades, plus fewer joints that reduce turbulence, often permits designing the system with flatter grades and shallower trenches. Or, as an alternate economy, pipe of smaller diameter may be specified.

Transite Sewer Pipe is made of asbestos, cement and silica by a special method of manufacture which develops high, uniform strength and resistance to corrosion. It is available in four strength classes in sizes to 36". This permits selection of the pipe best suited to trench conditions, frequently eliminates the need for concrete cradles.

For further details, write Johns-Manville, Box 290, New York 16, N. Y.

*Transite is a Johns-Manville registered trade mark

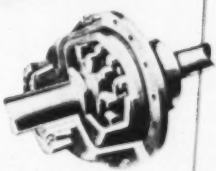
.....Johns-Manville

TRANSITE SEWER PIPE...

MACK MODEL LR ...15-TON DUMP TRUCK

Keeps the Shovels HUSTLING

...Payloads Moving FAST



● Feature by feature – in every part – Mack Model LR is engineered to keep earth, rock, coal and ore moving away from the shovel – fast.

Regardless of weather or terrain, Model LR maintains positive traction through slippery mud or over uneven ground because of Mack's exclusive Power Divider differential. Power steering, air-assisted clutch, offset driver's position, proper weight distribution – all contribute to easy handling ... assure nimble maneuverability ... fast, profitable hauling.

Study the standout features Model LR brings to your job. Compare them, point by point, with any other make of truck for off-highway dump work. You'll find they all add up to give you increased profits through faster time cycles and greater output at lower cost.

AMPLE HORSEPOWER: Standard engine, 196 h.p.; other engines from 150 h.p. to 306 h.p. Available in either gasoline, diesel or butane types.

MACK POWER DIVIDER: Assures good going through mud and over uneven ground by effectively transferring power to the wheel having the best traction.

MACK DUPLEX TRANSMISSION: Eight forward speeds provide a ratio range to meet the requirements of every off-highway hauling condition.

AIR-ASSISTED DOUBLE PLATE CLUTCH: Makes possible almost effortless operation; reduces driver fatigue to a minimum.

MACK PLANIDRIVE REAR AXLE: Three-pinion planetary final reduction gears located outboard of each wheel, provide large reduction without excessive size of carrier, differential or axle shafts.

POWER STEERING: Hydraulic power steering is shock-proof, positive and fast – gives easy, effortless control.

MASTERFUL AIR BRAKES: Air-actuated brakes have nearly 1000 square inches of braking area properly distributed, front and rear, to assure fast, positive and effective braking on all four wheels.

RUBBER SUSPENSION: Mack rubber Shock Insulators on front springs and rear axle support-arms eliminate twisting strains, absorb vibration, require no lubrication or adjustment, and last indefinitely.

Be Profit-Wise

MODERNIZE WITH

Mack ...outlasts them all!

Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

GREAT GRADERS

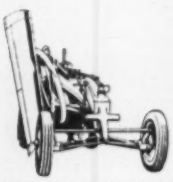
THERE'S no guessing about the performance of "Cat" Diesel Motor Graders with John S. Pukrop, Contractor, Ivanhoe, Minnesota. He knows from experience that these husky yellow machines deliver 60-minute hours day after day. And that's half the battle in figuring and making profits on a job.

Here you see his "Cat" Diesel No. 12 Motor Grader busy on Pipestone County Highway No. 4 near Ruthton, Minn. Right on the heels of rough grading, it's finish grading 9.5 miles of 30-ft. highway. There's no time lost making repeated passes – the No. 12's positive controls keep the tough blade on the beam. But let's get the overall picture directly from Mr. Pukrop, who says: "In my book the No. 12 is the best of all graders and most economical to operate. It has many uses, of course, but we use it for grade finishing. Two miles per 10-hour day is the average, but it could do more if the rough grade was far enough ahead. 'Caterpillar' machines are by far the best on the market."

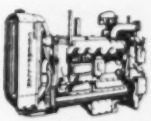
Whatever the grading job, there's a "Cat" Diesel Motor Grader the right size to do it most efficiently and economically for you. And there's a capable "Caterpillar" dealer near-by who's ready round the clock to give you "Johnny-on-the-spot" service. He sincerely believes this rugged yellow machine is the best in the field. Ask him for full proof of its performance!

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

Only **"Caterpillar" designs and builds *every* part of the famous "Cat" Motor Graders. This undivided responsibility is your assurance of a long life of efficient, economical performance.**

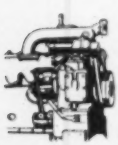


Each of the 3 sizes of "Cat" Motor Graders is a completely different machine. There's no performance penalty due to *excessive frame weight*, too little power or poorly matched working parts.

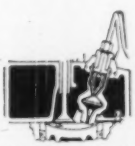


Only **"Caterpillar" Motor Graders have the dependable yellow engines—the power plants that are world famous for delivering 60-minute-hour performance every hour day in and day out.**

Lubricating oil is cooled in this radiator section to minimize carbon lacquer and gum formations — enemies of long engine life. Lower temperatures preserve the lubricating qualities of the oil.



Safe and sure Diesel starts are assured by this electrically started gasoline engine. It warms the coolant and allows the Diesel to circulate "lube" oil before actual starting.



Castings like this cylinder head on "Cat" Diesels are made right in "Caterpillar's" own foundry, where tolerances and quality can be closely controlled — another example of precision engineering!

CATERPILLAR

REG. U. S. PAT. OFF.

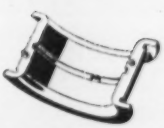
ENGINES • TRACTORS • MOTOR GRADERS

...and here's the proof!

This "Cat" Diesel No. 12 Motor Grader is one of the fleet of "Caterpillar" equipment owned by John S. Pukrop, Contractor, Ivanhoe, Minn. Other big yellow machines include five D8 Tractors, two D7 Tractors, a DW10 wheel-type Tractor and No. 10 Scraper.

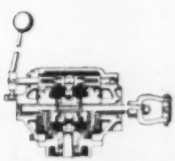
Typical of "Caterpillar" quality are these aluminum alloy pistons. Tops are oil sprayed for coolness and long life. Cast iron compression-ring belt keeps this vital ring working at top efficiency.

"Caterpillar"-built fuel injection equipment is trouble-free and fool-proof. Injection capsules and pumps can be replaced on the spot in the field — no adjustments are necessary.

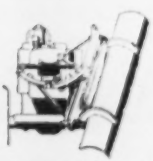


Exclusively "Caterpillar," these solid aluminum "con" rod bearings give low rate of wear, ability to carry heavier loads, exceptional heat transfer characteristics and high corrosion resistance.

"Caterpillar" Motor Graders are designed for exceptionally good operator visibility. Sitting down, the operator can see toe and heel of the blade with equal ease. That helps keep jobs moving.



Mechanically operated controls give the user the constant control that is so necessary for precision work. They're quality built — changes in temperature do not affect them.



"Caterpillar's" exclusive side-shift mechanism allows extreme blade positions without the need for manual adjustment of linkage. You'll find this a real work- and time-saver on the job.

DIESEL

EARTHMOVING EQUIPMENT

Ask your dealer for a demonstration! Ask him for a showing of the new film, "Better Blading"!

HELTZEL

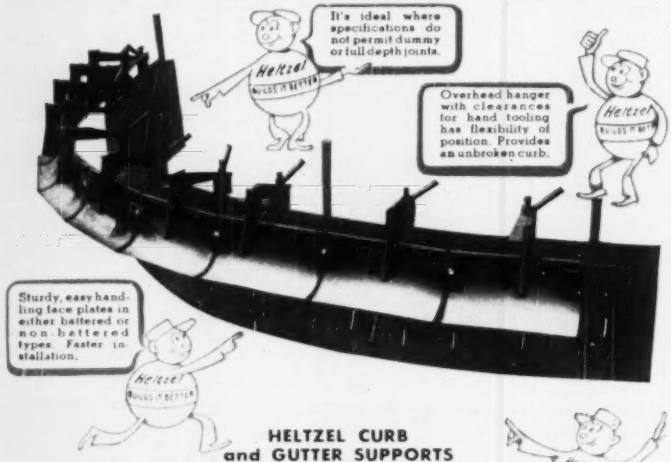
Heltzel BUILDS IT BETTER

SUPERIOR Forms—

CURB & GUTTER

Demand for Heltzel forms comes from experienced contractors who know Heltzel forms save time and money. TIME — because firmer installations can be made faster. MONEY — because Heltzel equipment lasts longer and involves less labor on the job. The example below of a flexible form is typical of Heltzel better built forms.

- CURB FORMS & ACCESSORIES
- COMBINED CURB & GUTTER
- SIDEWALK FORMS
- RIGID RADIUS FORMS
- FLEXIBLE FORMS
- SPECIAL FORMS


It's ideal where specifications do not permit dummy or full depth joints.
Overhead hanger with clearances for hand tooling has flexibility of position. Provides an unbroken curb.
Sturdy, easy handling face plates in either battered or non-battered types. Faster installation.

HELTZEL CURB and GUTTER SUPPORTS

The only flexible form with three alternate methods of support — (1) Full depth division plates, (2) Skeleton division plates, and (3) Overhead hangers. All Heltzel forms improve contractors' operations, because they speed up job while making the work easier.

PUT HELTZEL TO WORK MAKING MONEY FOR YOU

Before you buy, before you start a job — check with Heltzel! Heltzel better built curb and gutter forms in standard types will save for you. Special shapes designed by Heltzel to job specifications make difficult jobs click like run-of-mine work. Write for information now.

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HELTZEL STEEL FORM & IRON CO., WARREN, O., U.S.A.

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NEWS BRIEFS

No Time Wasted—As indicated, (ENR April 13, p 23) the Senate wasted no time in agreeing to the conference report on the 1950 Housing Act which the House ok'd just before leaving Washington for an Easter recess. The Senate passed it April 10 and hurried it to the White House.

Hold Everything—A group of western conservationists wants all construction work stopped forthwith on Missouri Basin Project jobs. The demand comes from the Associated Missouri Basin Conservationists, stems from the ancient dispute as to water availability and use.

Getting Bigger—Pennsylvania's General State Authority has allocated another $2,750,000 for construction of mental hospitals, raising its program in this field to $80,000,000. The new funds will be spent at four institutions. And it has allocated $8,000,000 for buildings at Pennsylvania State College, which asked a $15,000,000 program.

Lots of Work Ahead—Quebec's government has reached an agreement with the Aluminum Company of Canada for eventual development of 600,000 hp of hydroelectric capacity on the Peribonka River at an estimated cost of $65,000,000 to $70,000,000. The development is to take place at two sites, Devils Falls and Passe Dangereuse.

Ho Hum Dept.—Facing a July 1 state deadline for operation of a sewage disposal plant, voters of Gibson City, Ill., have, for the third time in two years, rejected two proposed sewer bond issues.

Mystic Mystery—Boston's new Mystic River bridge continues to provoke discussion. Officials insist there's no foundation to stories that the bridge isn't attracting the traffic it should, and they add that the new structure hasn't hurt the Sumner Tunnel's traffic flow between Boston and East Boston. Meanwhile, traffic experts say the bridge hasn't solved the traffic problem, that jams remain, with the worst to come when summer traffic levels are experienced. They say the bridge is ok, but that the Chelsea streets, and those beyond, are too narrow to handle the volume.

Money's Where You Find It—Paso, Wash., is going ahead with the installation of advertising signs on its parking meters even though the at-

(Continued on page 12)

NOW

A Tractor-Mounted All-Hydraulic Backhoe!

Here's a great new profit-making tool for contractors, cities, public utilities and towns. The New Oliver-Ware Hydro-Trencher is an all-hydraulic backhoe mounted on Oliver Industrial "77" or "88" Tractors. It's a smooth-acting, simply operated unit that will do a job comparable to much higher priced conventional backhoes . . . outperform many!

Note these profit-making features:

SIMPLE OPERATION. Smooth, finger-tip control hydraulic operation eliminates operator fatigue. Any man can operate this machine immediately . . . specially trained operators are not required.

SAFETY. No cables to break . . . no slipping brakes. Safety feature in hydraulic system reduces wear and tear on engine. Engine speed seldom has to go beyond idling.

COMPACTNESS. Unit can work in areas where truck and crawler mounted units cannot work.

MOBILITY. Tractor-mounted unit moves easily and quickly from job to job under its own power and is ready to dig on arrival.

STABILITY. Individually controlled hydraulic outriggers allow operation from a level position . . . hold tractor in place.

VERSATILITY. Digs in any kind of ground . . . over 10 feet deep at speeds comparable to any conventional backhoe. Hydraulic controls give boom down pressure for fast digging . . . a full bucket every time.

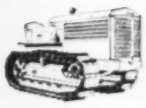
A Swing Loader Bucket Attachment is available for use with the Oliver-Ware Hydro-Trencher and can be installed in a few minutes.

For the complete story on this new, profit-making unit, send the coupon.

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of Industrial Wheel and Crawler Tractors



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Industrial Division
19300 Euclid Ave., Cleveland 17, Ohio

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Send me the facts on the new Oliver-Ware Hydro-Trencher.

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This Exide Battery is cranking thousands of your engines, Mr. Diesel

When your engines first came into general use, Mr. Diesel, its high compression ratio made cranking a major problem. Exide engineers solved it by building a battery designed specifically for the job.

To engine builders . . . and manufacturers of Diesel-powered equipment . . . and users of Diesel engines . . . this means: When an Exide does the cranking, your engines START.

You can count on a *quick breakaway, high cranking speeds, low voltage drop.*

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WHATEVER YOUR CRANKING PROBLEMS
Exide's Research Staff—the largest in the industry—is ready to put its vast experience to work for you.

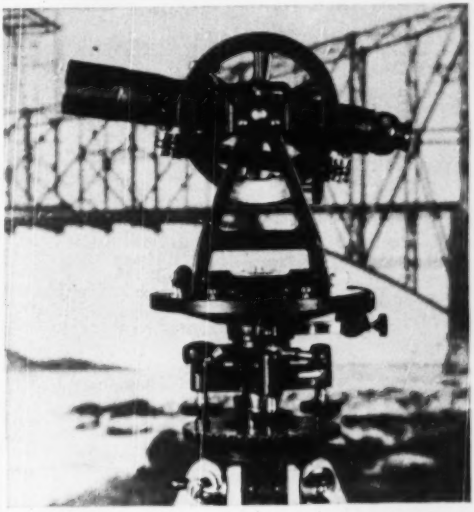
"Exide" Reg. Trade-mark U. S. Pat. Off.

1888 . . . DEPENDABLE BATTERIES FOR 62 YEARS . . . 1950

Another technical editor confirms reasons why engineers prefer Gurley Aluminum Transits

Combining durability and lightness with precision for surveying transits

by David W. Veit
Editor, Die Castings Magazine



MANY surveying instruments built by W. & L. E. Gurley, Troy, N. Y., are accurate within one second of arc. If projected, this represents a maximum error of ⅝ inch in a mile.

However, precision is not the only requirement of these instruments. At least three other major factors influence the design and choice of materials for this type of equipment.

In the first place, a surveyor's transit must not only *be* accurate, but must maintain its accuracy over an indefinite period of years despite all sorts of weather and climatic conditions —heat, sub-zero temperatures, dampness, dust or salt-saturated atmospheres.

Second, it must withstand rough usage. This is outdoor equipment subjected to impact and abrasion.

The third requirement — no less important than the other two to the surveyor who carries the transit around all day long —is lightness.

The combination of accuracy and ruggedness could be secured by constructing the transit of heavy-sectioned castings, forgings or fabrications in steel or bronze, extensively machined and elaborately assembled. This choice of materials would, however, fail to include one significant feature—lightness.

The way in which Gurley has been able to combine all three desirable features has been by turning to aluminum for a major group of components. And since aluminum has been picked to fulfill the physical and mechanical needs of these surveyor's transits, it is not surprising that several of the most important parts are being produced most economically by die casting.

Die cast aluminum parts include the truss standard, telescope housing and leveling spider, as well as rod targets and tripod clamps. Aluminum alloys used for these transits have greater stability and rigidity than bronze. In addition, the die casting process permits unitary construction of the mounting frame, contributing further to rigidity.

From the point of view of weight reduction, aluminum die castings have permitted a 25 percent decrease in total weight, as compared with sand cast bronze. Die cast aluminum offers additional weight saving advantage, even as compared with sand cast aluminum, due to the thin, uniform wall section which is practical by die casting.

This pioneering instrument builder has used aluminum die castings wherever possible; this is one of the few production short cuts possible in a manufacturing operation characterized by extensive machining, finishing and assembling operations within close tolerances.

This company has maintained its leadership in the field of engineering and other types of instruments by a willingness to investigate and introduce into their production line the new materials and methods made available by technological advance. The excellent reputation of this company's instruments during the past century is sufficient testimony for the reliability of the materials which they use.

Reprints of the full-length article from which this is reproduced are available on request.

Field-proven over 74 years—Gurley Aluminum Transits are used from the Arctic to the Tropics. In the words of a combat engineer during World War II, "These instruments were subjected to the worst degree of heat, cold, mud, and dust a transit *should not* have. After being dropped, and everything else imaginable, they still did work up to par." The first Gurley Aluminum Transit was retired after 50 years of service to join the exhibit of Gurley "firsts." Gurley Instruments are described in Bulletin 50. Would you like a copy?

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Surveying and Scientific Instrument Makers
Since 1845

W. & L. E. GURLEY, UNION PLAZA, TROY, NEW YORK

Surveying and Engineering Instruments, Hydraulic Engineering Instruments, Standard Precision Weights and Measures, Paper and Textile Testing Instruments, Rattler Making Facilities, Aeronautical Navigating Instruments

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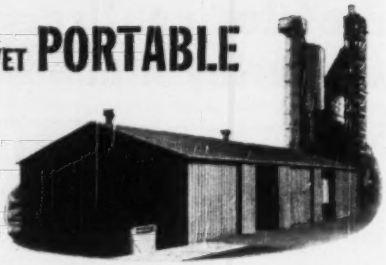

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In a single building you can set up complete office quarters for the field staff, engineers and timekeepers, and partition off the rest of the building for storage space for valuable equipment and materials.

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INCORPORATED IN EARLE OPERATING MACHINERY **EARLE GEARS**

(Continued from page 8)

torney general says it's illegal. Contracts had been signed. And in Louisville, Ky., city trash cans are yielding ad revenues, too. Until recently, it contracted away the ad space for repair and maintenance on the cans. Now it's keeping them in condition, and collecting the revenue.

Write Your M P. Now—Canadian engineers have been urged to get into politics. A speaker told the Association of Professional Engineers of Alberta that because government is getting deeper into big construction projects, engineers should get deeper into government.

Atoms Move West—Atomic Energy Commission has announced plans for a $7,000,000 research project in the San Francisco Bay area. It'll involve building a particle accelerator at Livermore Naval Air Station, requiring some new building and some modification of existing structures.

No Depression Yet—The California Senate has killed a bill which would have authorized a $1 billion bond issue for a public works construction program. The Senate left the door open for consideration next year, but felt that the proposal should have further study. The Board of Public Works, it said, should study it.

Productivity's High Here—Tunnel drilling crews on Los Angeles' Owens Gorge power project claim a record for 31-day, round-the-clock distance drilling. They pushed the No. 3 tunnel shaft 2,204 ft. Earlier record was 1,879 ft, set in the Carlton Tunnel, Cripple Creek, Colo., in 1940. In Owens Gorge Tunnel No. 1, crews working from both ends dug 104 ft in one day, 80 ft more than the one-day Carlton record.

THE COVER

The Delaware Memorial Bridge, near Wilmington, Del. (which will be the southern terminus of the New Jersey Turnpike) is the largest bridge under construction in the United States today.

Anchorages for its 2,150-ft suspension span are both offshore, and require an extensive floating plant in their construction. The east anchorage, now within two lifts of the top, will contain about 70,000 cu yd of concrete. It was started with the largest continuous tremie pour on record—27,000 cu yd in 7.4 days.

Merritt-Chapman & Scott Corp. is substructure contractor, and Howard, Needles, Tammen & Bergendoff the consulting engineer. The bridge is a project of the Delaware State Highway Department.

FIRST STEAM HOSE TO GIVE OVER 2000 HOURS CONTINUOUS SERVICE

at 200 lbs. Working Pressure!

Steam Hose users have long been stymied by the costly problem of tube-swelling during normal service life of ordinary hose. They turned to BWH for the solution.

BWH came up with the answer . . CONCORD #20! In building this revolutionary new hose, the rubber tube was first locked securely between two braids of high tensile steel wire. The cover and static wires were added. Then the new construction was subjected to a *continuous flow* of 200 lbs. steam pressure *for over 2000 hours!* At the end of this record-smashing test, the tube showed no evidence of hardening or swelling! Couplings were re-attached without the slightest difficulty because the original inside diameter of the tube was maintained throughout!

Next to the rugged abrasion-resistant cover is an open weave of asbestos braid which assures cover adhesion and includes new type static-conducting wires.

Ask your BWH distributor to demonstrate the whip-like flexibility of this rugged new hose. Check the braids of high-tensile steel wire which give it strength without bulk. Concord #20 does the job without breaking the operator's back, guards against "flash" explosions and, from the inside out, assures unequalled service life.

HAVE YOU A JOB WHERE STAMINA COUNTS?
Bring us your toughest problems. We're specialists in solving them. Consult your nearest BWH distributor or write us direct.

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

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At Utah Gravel Plant

IT'S RUBBER THAT PUTS THE ACTION IN TRACTION

LET

TOURNADOZER moves 94.5 yds. an hour on 321′ 1-WAY PUSH

Strong Company, of Springville, Utah, needed approximately 105,000 tons of gravel for sub-base and hot-mix surfacing on U. S. 89-91, near Orem, Utah. Biggest problem was how to feed gravel from pit to mix plant fast enough for steady plant output.

They had been using a 144 h.p. crawler-dozer, which was bringing in 81.2 yards an hour over a short, 175′ 1-way push. To increase hourly yardage output, Strong decided to try the high-speed, rubber-tired mobility of a Tournadozer. They brought in a Super C Tournadozer . . . put it to work on longer distances, averaging 321′ one way . . . found that it consistently delivered 94.5 yards of gravel an hour to the plant.

Considering difference in dozing distance, Tournadozer *more than doubled* the crawler's output . . . delivered 303.34 station yards hourly to the crawler's 142.1. Tournadozer had the advantage of side-wings welded onto blade, which increased its load in the pit-run gravel from normal 2.5 to 3.97 cu. yds. (However, even figuring Tournadozer production without side-wings, at a 2.5-yard load, it still has an hourly production gain of ½rd more station yards than the crawler.)

Strong Co. BOUGHT THE TOURNADOZER BECAUSE:

Giant, 21.00 x 25, low-pressure tires gave plenty of power and traction to "drift" 3.97-yard loads of gravel from pit to plant, and up 6% grade to hopper in 2nd gear.

Instantaneous, non-stop speed selection . . . plus faster-than-crawler speeds in both forward and reverse . . . paid off in 23.8 loads delivered to the plant per hour over 321′ average distance.

Tournadozer's fast action on rubber makes longer dozer distances profitable . . . increases range of operation and gives complete flexibility to bring in loads from anywhere in the pit.

Fast rubber-tired speed and 100% mobility also let Tournadozer run anywhere on the property, anytime, to handle rush, odd-job assignments. A half mile is only a couple of minutes away. Also drives from one job to the next with no loading delays, no waiting for trailer. The Tournadozer is not prohibited on any type highway, pavement, or in-plant roads.

Finger-tip electric control of blade gives fast, positive action. Operators also like Tournadozer's easy, air-actuated steering controls. Takes hard labor out of operating . . . reduces "end-of-day" slow-down . . . permits operator to work at peak efficiency.

You, too, can increase production on your work with Tournadozers. You're missing added profits every day you delay! See your LeTourneau Distributor . . . TODAY.

Tournadozer—Trademark Reg. U. S. Pat. Off. 8171

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PEORIA, ILLINOIS

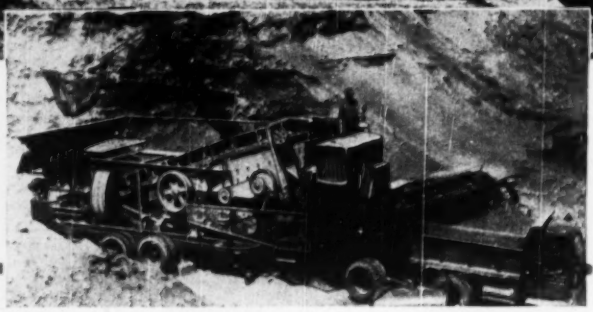
JOB-PROVED Over 4,000 Built and Working

TOURNADOZERS

Greater Capacity-Lower Operating Costs

9-B TELSMITH Dual PORTABLE *(above)* with field conveyor and hopper, owned by Lyle J. Walker and operating near New Hudson, Michigan.

NEW 7-A TELSMITH Dual PORTABLE *(right)* with plant hopper, owned and operated by Tri-County Sand & Gravel Co., Pulaski, Wis.



Check these Telsmith advantages—

1. Greater Capacity because of 25% larger screen areas; and 25% larger capacity of rotary elevator with improved overhead drive.
2. Improved Transmission Equipment—(a) all main sprockets are now high carbon, heat treated steel; (b) all bearings are anti-friction type; (c) larger capacity, improved type Twin Disc Clutches with fully enclosed anti-friction shifting collars.
3. Easier Accessibility for adjustment and repair, with a minimum of under-chassis work needed.
4. Improved Control mechanism for easy operation.
5. Abrasion Resisting Steel of higher quality, at all points subject to wear.
6. Larger Under-Screen Hopper with steeper sides and easily accessible clean-out door.
7. Improved Larger-Capacity Receiving Hopper and feeding mechanism—with removable grizzly.
8. Six Adjustable Jacks are standard equipment on the new Model 9-C Dual Portable Plant.

Now Made in Two Popular Sizes

9-C Dual—with 10-in. x 36-in jaw crusher, 30-in. x 18-in. rolls, and 4-ft. x 10-ft. 2½-deck screen.

NEW 7-A Dual—with 10-in. x 30-in. jaw crusher, 24-in. x 16-in. rolls, and 4-ft. x 8-ft. 2½-deck screen.

Send for Catalog 265 P-16

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THE CONSTRUCTION WEEK

UP FUNDY, DOWN 'QUODDY—While a four-man board of engineers was frowning obliquely on any revival of the U. S.-sponsored Passamaquoddy tidal power development, Canadians were reviving their own dreams of harnessing the enormous tides of the Bay of Fundy (of which Passamaquoddy is an arm). The four-man board told the U. S.-Canada International Joint Commission it would cost $3,900,000 now just to determine whether 'Quoddy is practical (despite the rather cold fact that the U. S. already had started—then abandoned—the project). Biggest cost, said the board, would be $1,655,000 for foundation explorations. The report will be used as basis for an IJC report to the two governments. Meanwhile, at Ottawa, the Resources Ministry told parliament it had instructed its engineers to survey possibility of some tidal-power development in the Bay of Fundy proper. What's intriguing Canada is a report by W. A. S. Melanson, Moncton, N. B., engineer, who says 2,140,000 hp can be obtained at a site near the confluence of Shepody Bay and Cumberland Basin.

STRATEGY—Interior Secretary Oscar Chapman confirmed some of the Bureau of Reclamation's strategy for dealing with private power companies as he explained to Senators why the Bureau needs funds for power facilities. The Bureau, said Chapman, wants appropriations for specific projects in territories in which private power companies operate, in order to put itself in a stronger bargaining position—even if the projects themselves are never actually built. Said Chapman: Reclamation has met little success in contract negotiations (for transmission and interchange agreements) with Pacific Gas & Electric, Public Service of Colorado and Montana Power. So, Reclamation should have the appropriations for power facilities in the areas covered by these companies "to effectively support our position and protect the government's interest."

TRUCKS VS TURNPIKE—A recent spate of accidents involving trucks on the Pennsylvania Turnpike has resulted in at least one trucking firm deciding to abandon use of the superhighway—although company executives refused to blame the accidents for their decision. Shirk Motor Express Corp., which has been paying something like $12,000 a month in turnpike tolls, ordered its 400 trucks off the road, back to toll-free Route 22. Within one recent week, four fatalities occurred on the Turnpike—all four involving trucks, three of them Shirk vehicles. It was said at Harrisburg that executives of several major trucking firms have been in conference with the Turnpike Commission over the truck accidents. Turnpike Commission officials reportedly told Shirk it would find that it pays to use the highway.

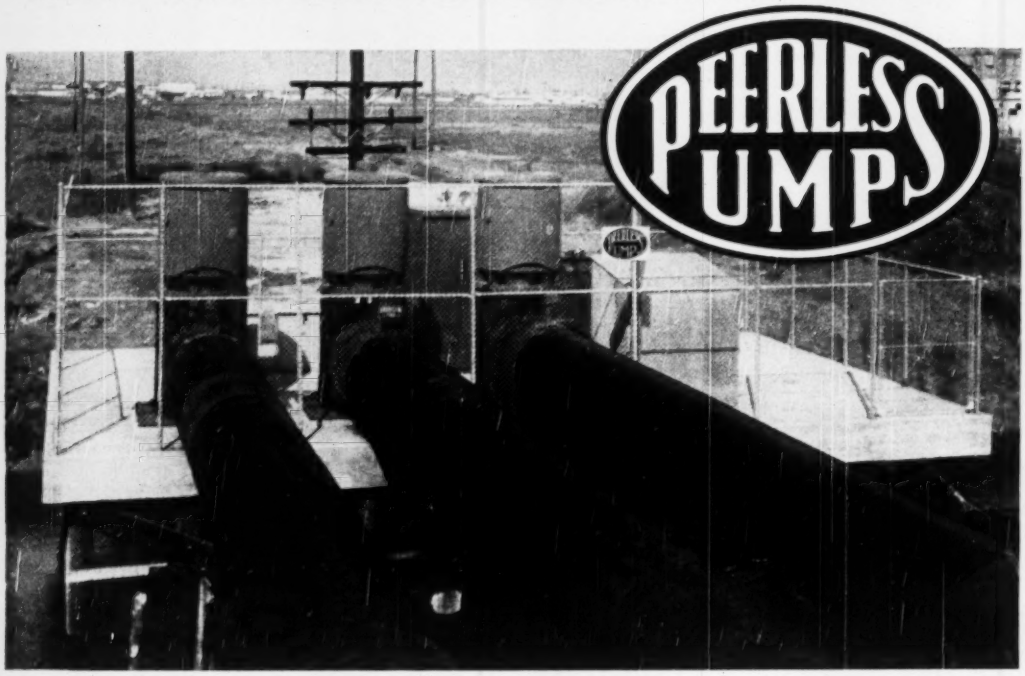
MORE U. S. SPENDING?—You can look for increasing government spending over the next two years—prodded by the twin fears of rising unemployment at home, and the world political situation. The political situation, say observers, will pry loose more funds for defense. But the unemployment problem—a very important local political fact—will prompt more things like those already apparent: Efforts to revive the Civilian Conservation Corps; the big boost in the pending Omnibus Authorization Bill (from $1.5 billion to $2 billion).

WHERE'S THE MONEY?—Fresh out of revenues to support needed highway programs, Maryland and Ohio are considering the alternatives of raises in gasoline taxes or toll roads. The two states will consider upping their taxes by two cents per gallon. In Missouri, where voters upset a proposal for a two-cent jump (to four cents), Gov. Forrest Smith made a rather remarkable post-election statement. Said the governor: "The election is over. I'm appealing to all to join hands and march forward united to help make Missouri the 'Show Me' state of the nation—without adequate highway revenue."

CEMENT INDUSTRY?—North Carolina's dream of a state cement industry got a new shot in the arm. J. L. Stuckey, state geologist, reports "vast deposits" of high grade calcium carbonate in Pender and Duplin counties.

NOT YET, ANYWAY—Chances are, nothing will come of the O'Mahoney committee's report on the December, 1949, steel price increases, at least for a while. It would require the Federal Trade Commission to maintain current data on steel costs, prices, output and profits, and it would set up a 30-day cooling off period for price boosts. Also, it would authorize two further studies, one to develop new competition in the industry, the other to determine whether steel has acquired the characteristics of a public utility and to what extent steel's fortunes affect national fortunes. Washington's guess is that these studies may be started this year, but that nothing further will come of the O'Mahoney report during this Congress—which wants to go home.

PEERLESS IN THE WORLD OF MOVING AND CONTROLLING WATER IN LARGE VOLUMES



PEERLESS HYDRO-FOIL PUMPS

OFFER CAPACITIES RANGING UP TO 220,000 G.P.M. AGAINST LOW AND MEDIUM HEADS FROM 2 TO 60 FEET

MIXED FLOW AND PROPELLER TYPES – The best way to move large quantities of water against low or moderate heads is to use Peerless Hydro-Foil Pumps. They're available in two types—propeller type and mixed flow type. Advanced principles of hydro-dynamics applied to the design of these versatile pumps insures lower overall maintenance outlay and reduced pumping costs, in all applications.

SINGLE AND MULTI-STAGE MIXED FLOW PUMPS – Peerless mixed flow pumps are made in single or multi stage units to give flexibility in the selection of each pumping unit. These pumps complement the propeller type and embody advantageous characteristics of both axial-flow and centrifugal pumps. Designed for sump applications with minimum submergence, maximum heads, minimum installation space. Also available in close-coupled types.

ALL TYPES OF DRIVES – Any type of drive may be used with Peerless Hydro-Foil Pumps. These include: electric motor, right angle gear drive, V belt and flat belt or a combination of drives, if required.

REQUEST 24-PAGE BULLETIN – For complete design, construction and application data including suggested station arrangements of these Peerless Hydro-Foil Pumps for economical, large volume water pumping, request Bulletin B-148-1 now.

A FEW OF THE SERVICES AND APPLICATIONS OF THESE MULTI-PURPOSE PUMPS

- DRAINAGE
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- INDUSTRIAL AND PROCESSING APPLICATIONS
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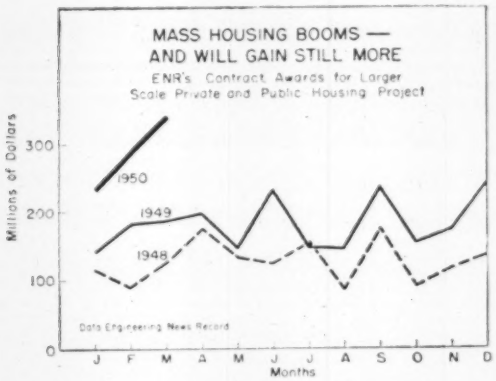


WHAT'S AHEAD FOR HOMEBUILDERS?—II

The boom in homebuilding can run on through 1952—if the industry can develop a replacement market.

This is the conclusion of a careful study of homebuilders' prospects by S. Morris Livingston, top-flight Department of Commerce economist. As a recent Trend reported (ENR April 13, p 19), he shows how homebuilders can keep on at the 1947-48 level—1,475,000 homes a year—through 1952. That target includes not only the permanent new homes reported by the Bureau of Labor Statistics each month, but farm homes and trailers and other temporary or converted housing.

Builders this year are well on their way toward meeting that target—as the chart on contract awards for mass housing shows. With business prospects good, and incomes and employment expected to stay at a high level, builders can probably run through the year without worrying about the replacement market.

But to keep on going next year and the year after, by Livingston's estimates, builders must replace about 357,000 existing homes with new homes each year. Doing that involves some big problems.

Houses seldom wear out. Even with fires, tornadoes, and prewar slum-clearance programs, replacement building has never amounted to much. Housing experts figure that it probably doesn't average more than 50,000 units a year now.

The problem is to produce new houses at such a low cost that people will move into them, leaving substandard homes to be knocked down. But always in the past it has paid to spend a little money remodeling old homes. They could always be rented if the price were low enough—and as long as they were there, the incentive to replace them with new homes wasn't much in evidence.

In economic terms, as Livingston points out, the problem is to make housing cheaper in relation to peoples' incomes. In the 1930's, incomes were so low that no replacement housing market developed. Since then homebuilding costs and incomes have moved up together. Certainly there is not yet enough of a gap between incomes and costs to encourage scrapping older homes and replacing them with new ones on any large scale.

The potential market for replacement housing is big enough, however. In the years since the war alone, the U. S. has built well over a million trailers or other temporary housing units. The people living in them, by themselves, make a sizeable market for new, permanent units.

No one knows how much other American housing should be replaced. Statistics are of little help in finding out. But it is clear that there's enough housing that needs to be replaced to keep homebuilders going at a high level for years to come—if the market can be developed.

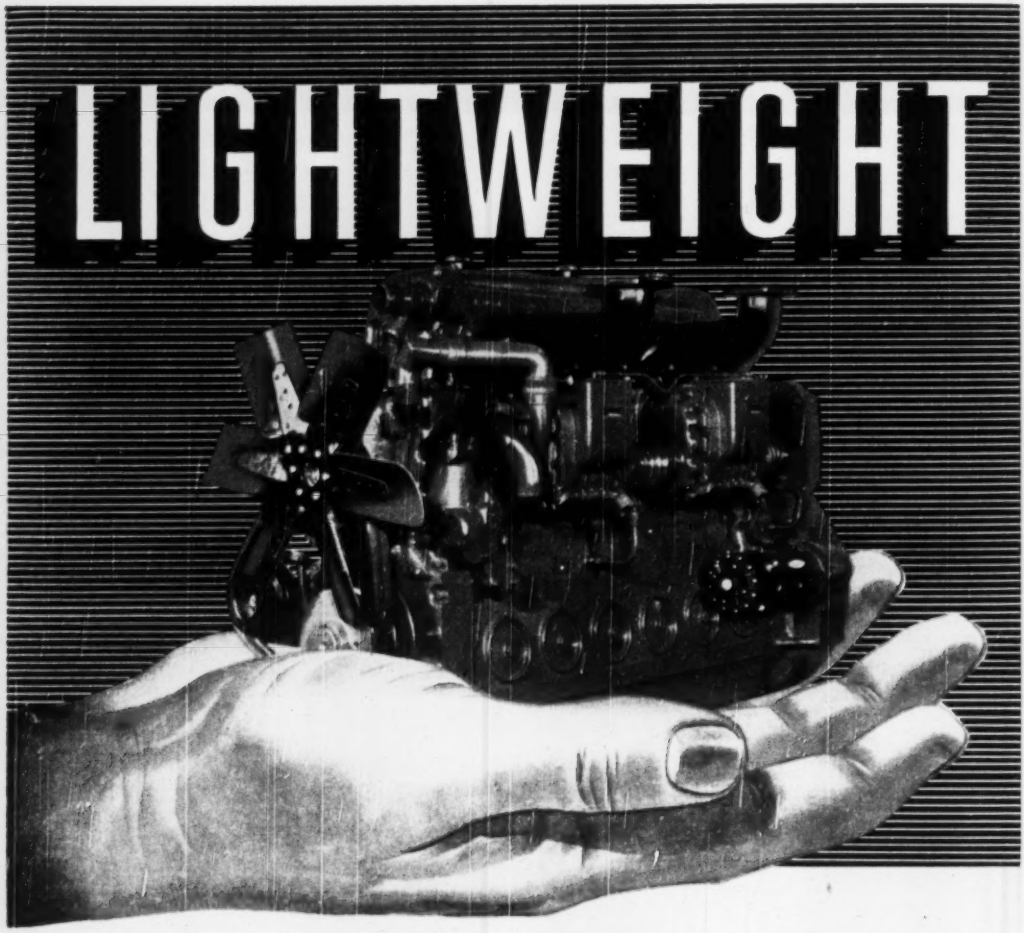
To develop that market, two things are needed: Lower building costs and some additional help from government.

Competition will make it profitable to knock down some old homes and replace them with new, if costs can be cut. But a big part of this country's sub-standard housing is concentrated in big cities. There builders in many cases need help from government to put together parcels of land and to finance large-scale slum clearance. Once the land is available, builders can go ahead on their own.

As it is now, though, the government programs that are scheduled—of which the most important is the public housing and slum-clearance program enacted by Congress last year—do not add up to anything like 357,000 units a year. In fact, postwar public housing programs have concentrated on building new developments outside of substandard areas.

It is still too early to say how much building costs must be cut, or how much more government action will be needed, to develop this replacement market. But Livingston's figures do show the magnitude of the shift in homebuilders' markets that is ahead.

The figures, too, point to a continuation of the trend toward engineered homebuilding. If homebuilding is to stay at a high level in the years ahead, more and more of the new units will be in large-scale projects. In the last year, the share of all home building which has been in large scale projects has grown very rapidly. Judging by the Livingston study, the share should double in the next few years.



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Rail-Truck Terminals

A NEW FIELD of design studies for railroad engineers is opened up by a special service inaugurated by the Pennsylvania Railroad. That company has set out to meet less-than-carload truck competition by giving better service—from the shipper's platform to the consignee's door. Shipments are trucked to modernized terminals for classification, then placed in specially designed cars that are speeded to the other terminals near the destination, for final delivery by trucks.

The success of this system—over all-truck movement—lies in mass handling by the railroad from the truck-to-rail terminal to the distant rail-to-truck breakup point. The truck operator must use the less efficient long-haul truck for this job. And efficiency of the new service depends in large measure on the transhipping terminal.

Most transhipping terminals in use today are built to archaic designs: Based on operating so-called team-tracks and city freight terminals in which shipments were transferred by hand trucks to horse-drawn vehicles. They are not laid out for efficient movement of large motor trucks, or for battery-powered platform trucks, belt conveyors or overhead conveyors, or for the use of containers that can be lifted from rail car to truck chassis. Indeed, few designs incorporating these newer aids have been made. The field, therefore, is wide open for some pioneer thinking on the part of railroad engineers. There is a real challenge in the need for a realistically up-to-date rail-truck terminal.

Props for Housing

THE 1950 HOUSING BILL, which Congress sent to the White House last week, is a catch-all whose component parts are difficult to unscramble. But back of all its provisions, and highlighting its compromises, the objective is plain—to keep the housing boom rolling by offering special incentives to special groups.

Already propped up by federal aid through FHA insurance of mortgages (originally sound in concept and plan), housing now gets some new props. The most novel one is a form of direct lending to veterans who cannot obtain 4% loans from private sources, and to educational institutions that can see an advantage in building student and faculty housing with 2.5% money.

A much strengthened prop is also put under rental apartments and housing for sale. This is in the form of $2.25 billions additional insurance authorization for FHA's Title II. And, since high-cost apartments have shown signs of being overbuilt in spots, the new Title II authorization offers an incentive of better terms for mortgages for low-cost projects—family units that can be built for under $7,000.

One prop, offered with strong White House recommendation, was wisely knocked out. This was the proposed financing program for "middle income" families, which would have subsidized with long-term 3.5% government loans any group banding together on a co-operative project.

But on balance, the new housing bill keeps housing dependent on federal largesse and support. Also, it continues to cater to different groups on different terms—in short exploits the political power of housing—and that is not a firm foundation. This does not mean that the housing boom is in danger of imminent collapse. Public slum-clearance housing, military housing, a probable return to normal number of vacancies—all are favorable factors for the immediate future. The danger lies in forgetting that artificial stimulation provided by easy government mortgage credit can lead to overbuilding and bust, just as overbuilding on private credit has in the past.

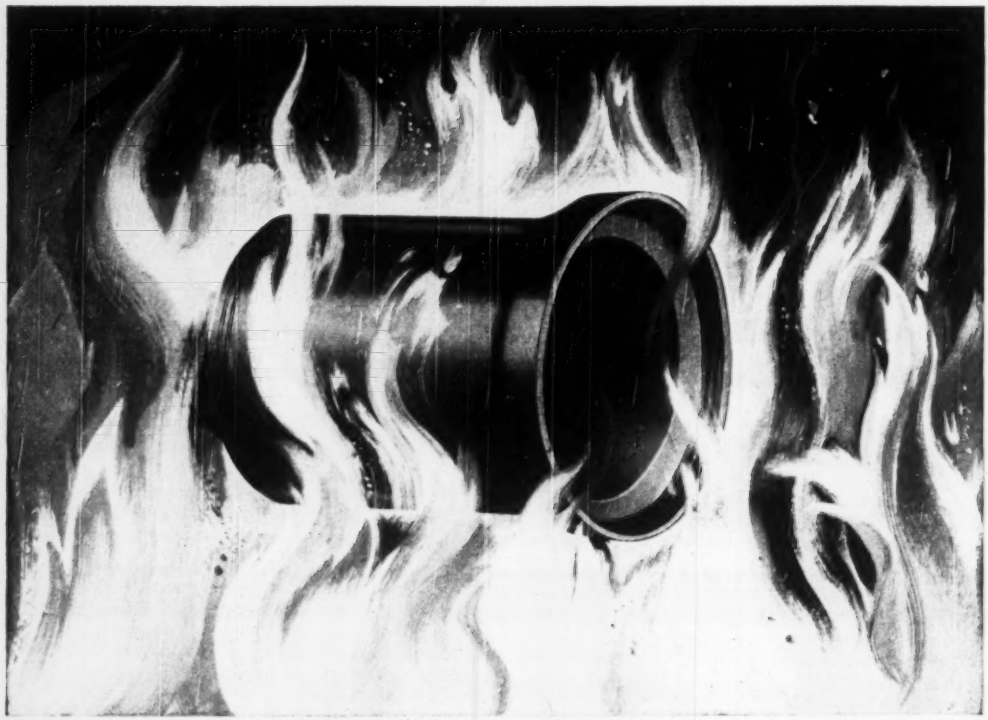
The significant thing about the 1950 housing bill is that it merely plugs leaks and puts props under weak spots. It does not knock out the dry rot, and put in some sound planks: Uniform mortgage interest treatment for all, and a mortgage low enough to require a reasonable equity investment on the part of the owner, for example. A bill based on these fundamentals would advance the long-term prospects of housing, which the 1950 bill largely fails to do.

Septic Tank Research

SEPTIC TANK and soil-absorption systems for disposal of household sewage have been designed by guess and by gosh for too many years. Design criteria have been accepted without analysis and used again and again to become weed-rooted in standard practice. And too often these standards are not confirmed by experience—much to the distress of the owner.

To work up a factual basis for design and operation, the U.S. Public Health Service has been studying individual disposal systems for almost four years. The first phase of the study is complete and basic data on septic tanks are available (p 32.) While the PHS cautions that the conclusions are tentative and may be slightly modified by future findings, the first-stage report outlines fundamental considerations for good septic tank practice for the first time.

Engineers, house owners and small contractors, will find useful the qualified conclusions set forth for better design practice, improved construction, and essential maintenance required for good operation. And they will look forward to future reports that will tie down tentative criteria definitely and serve up additional conclusions from continuing investigations.



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APRIL 20, 1950 VOL. 144 NO. 16

Omnibus river control bill clears Senate snag at last

Amendment rejected which would authorize 13 Columbia Basin projects to be built by USBR—Spending total raised $500 million over House-approved bill to $1.6 billion

After four days of debate last week, the Senate voted down an amendment that would have added to the Flood Control Rivers and Harbors authorization bill 13 Columbia Basin projects to be built by the Bureau of Reclamation. With this amendment out of the way, the Senate expected to vote quickly a $1.6-billion authorization measure.

The Senate bill then will go to conference to be reconciled with the original $1.1-billion measure passed by the House last summer. House members have been waiting impatiently for nine months while the Senate tried to clear up its involvement with Columbia Basin reclamation projects—in a bill that by parliamentary precedent should contain nothing but authorizations for Army Engineer projects.

It was the Army Engineer-Bureau of Reclamation agreement a year ago on cooperative development of the Columbia Basin that led to the long Senate delay. The working organization of the Senate requires that flood control and navigation projects go to the Public Works Committee and reclamation matters to the Interior Committee.

• **Part of comprehensive plan**—After long hearings on all proposed Army Engineer jobs—plus much testimony and discussion regarding the reclamation projects that are tied into the comprehensive plan for the Columbia Basin—the Public Works group last October reported a $1.6-billion bill limited exclusively to flood control and navigation works. Reclamation proposals for the Columbia Basin were passed along to the Interior Committee.

Pending hearings and a report on these projects from the Interior Committee, the Senate delayed consideration of the omnibus authorization bill. In February, the Bureau of the Budget told the secretaries of both Interior and Army what the President could approve in the way of projects—and a basin pooling account—for comprehensive development of the Columbia River Watershed (ENR Feb. 9, p 25).

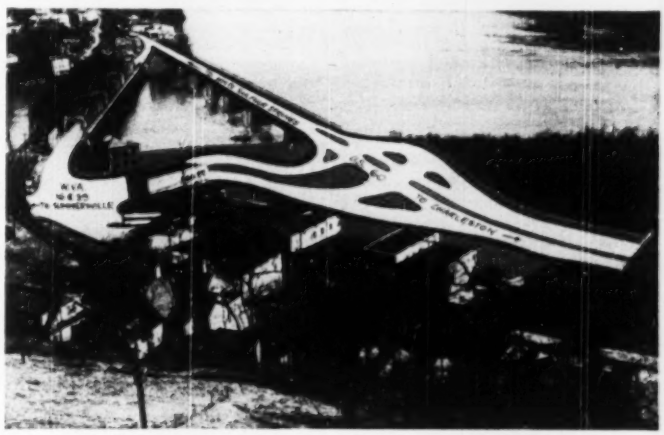
Early last month, the Interior Committee produced an amendment and a report recommending inclusion of 13 Reclamation projects estimated to cost $600 million, of which $200 million would be authorized at this time. The committee's proposal followed closely the recommendations of the Budget Bureau, with one major exception.

That exception was the Mountain Home Project, in Idaho. The Bureau had been willing to approve only five power items related to this project—to develop 120,000 kw. Its letter to Secretary Oscar L. Chapman of Interior had specifically disapproved any authorization at this time for the irrigation features—proposed eventually to bring in 192,000 acres of new farm land at an estimated cost of more than $1,000 per acre.

• **Reservation stipulated**—In the committee amendment, the Mountain Home irrigation proposal was to be authorized—with a reservation. This reservation stipulated that no money be spent on the irrigation features until the Interior Secretary, with the approval of the President, has submitted to Congress a finding of feasibility under Reclamation law, taking into consideration the participation of the project in the Columbia Basin account.

Senators Douglas (Illinois) and Holland (Florida), tore holes in the Mountain Home proposal. Senator Douglas asked why a patently profitable power project like Hells Canyon should be saddled with the cost of subsidizing Mountain Home. Defenders from the Northwest—Senators Magnuson (Washington), Watkins (Utah), and Dworshak (Idaho)—explained how the arid west can grow only through making use of the water available, even though the process involves sharing of costs among projects in a great river

(*Continued on page 24*)



BOTTLENECK BROKEN—One of the more hazardous highway bottlenecks in West Virginia will be smashed when the project pictured here is complete. It's at Gauley Bridge and involves filling, grading and paving a one mile stretch, plus the construction of an interchange, and also construction of a 700-ft bridge. The road contract went to Boso and Ritchie, Ravenswood, W. Va., the bridge contract to Keeley Construction Co., Clarksburg, W. Va. This artist's conception, superimposed on a photo, shows the bridge (foreground), at the confluence of the New and Gauley Rivers, where they form the Kanawha River.

(Continued from page 23)

basin. They readily admitted that without the power profits of Hells Canyon—included in the same amendment—Mountain Home could never be financed.

More compelling than specific objection to Mountain Home were two other criticisms of the Interior Committee's amendment. Senator Dennis Chavez, chairman of the Public Works group, strongly opposed the addition to his committee's bill of projects and policies on which the Public Works body had never passed.

This objection took Chairman O'Mahoney, of the Interior Committee, by surprise. He had offered the amendment in apparent belief that he was carrying out last October's understanding with the Public Works chairman. But Senator Chavez stuck to his guns: He would vote against any proposals that his committee had not recommended, even though he might favor the projects themselves. By jurisdiction as set up in the Senate organization, the Public Works group cannot pass on Reclamation projects.

• **Fear "basin account"**—At the root of the opposition by members of the Public Works committee and by other senators was a far more fundamental issue. These senators feared that creation of the Columbia Basin account would set a practically irreversible precedent involving hazards not yet fully explored or understood.

Earmarking of power revenues and of interest on the power investment for Reclamation purposes in the Columbia Basin, they foresaw, could mean a cost to the federal treasury of $4 billion in the next 50 years. This possibility overweighed the arguments brought forward by proponents that comprehensive development of the Columbia Basin could not proceed without the help of an accounting device such as the proposed basin account. Their arguments that the money actually would go into the Treasury, from which it could be disbursed only by act of Congress, proved less than convincing to the Senate—at least for the present.

To get further Senate consideration of the 13 Bureau of Reclamation projects and of the basin account, the Interior Committee will now have to introduce a separate bill. This course was recommended several times during the debate.

Hells Canyon is by far the biggest of the projects temporarily laid on the table. As determined in the joint agreement of the Army Engineers and the Bureau of Reclamation, this $300-million job—primarily for generation of 900,000 kw of power—is to be built by the Bureau.

FHA to assist cities on slum clearance

All field offices of the Federal Housing Administration have received instructions to help local communities carry out their federally aided slum clearance and urban redevelopment programs.

A joint statement this week (April 17) by Raymond M. Foley, administrator of the Housing and Home Finance Agency, Franklin D. Richards, commissioner of the Federal Housing Administration, and Nathaniel S. Keith, director of the Division of Slum Clearance and Urban Redevelopment, emphasized this new FHA assistance to local slum clearance projects throughout the nation.

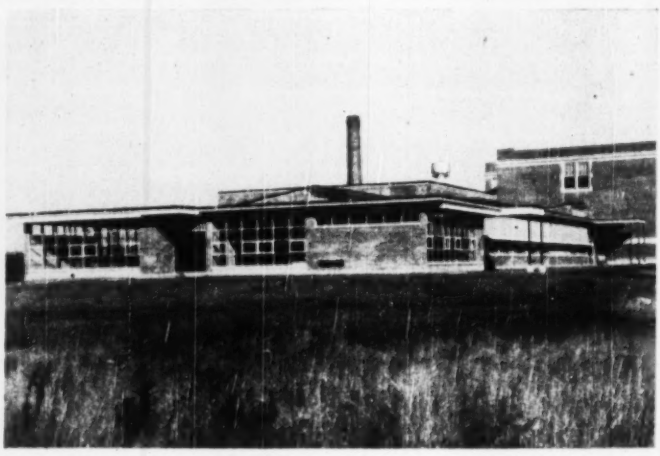
Directors of all FHA field offices are to be ready to make prompt studies and surveys that will determine whether proposed redevelopment sites are eligible for FHA mortgage insurance. Instructions to the field offices stress the stipulation of the law that private enterprise must be given maximum opportunity to participate in development and redevelopment of sites made available through the program.

• **Emphasis on financing**—Because financing tops the list of requirements for attracting private redevelopers, FHA offices are to give all possible aid in determining eligibility for mortgage insurance of new residential structures on cleared sites. As an example, the field instructions make it possible for an FHA office to give preliminary approval of a proposed redevelopment site—as eligible for FHA mortgage insurance—in a letter to the local redevelopment agency, where such a letter would help the agency in making final judgment on the project.

• **Grants absorb write-offs**—As set up in the federal-aid slum clearance program, the Housing Act of 1949 has $1 billion in loans and $500 million in capital grants to use over a five-year period. These funds are to assist communities in eliminating their slums and blighted areas through the assembly, clearance, preparation and sale or lease of land for redevelopment at its fair re-use value—for purposes specified in overall local plans. Both the loans and the grants are to help local communities acquire large tracts of slum or blighted land and to prepare these tracts for resale for public or private use under a general community plan of redevelopment.

Federal capital grants can be used to absorb up to two-thirds of the deficit resulting from sale of the prepared land at fair re-use value, with the local community absorbing at least one-third. Loans are available to help financially constricted communities in handling large-scale land acquisition and large-scale planning.

Federal funds are limited to assistance in preparing the site for the new use, officials said. Structures to go upon the site must be erected by public or private redevelopers, with the maximum opportunity going by law to private redevelopers.



HEAT FOR THE COLD BELT—Radiant heating was successful in this one-story, 15-room annex to the Fairmont School, in Bangor, Me. Hundreds of square feet of glass wall space were designed into the structure to provide maximum natural light. That presented a heating problem which radiant heating has solved successfully enough that it'll be in two other projected school buildings there. Eaton Tarbell & Associates was the architect and engineer.

See tolls, new taxes for Maryland highways

Road Commission chairman says funds must be found for improvements which can't be postponed

Robert M. Reindollar, chairman of the Maryland Roads Commission, stirred up a hornet's nest back home by a speech he made in Washington, D. C., two weeks ago. Talking to a local club of the American Automobile Association, he left the plain impression that Maryland soon may be forced both to increase taxes for roads, and to impose tolls on some new highways. Added revenues, he said, must be found to pay for needed, non-postponable improvements that will likely cost the state $750 million instead of the $200 million estimated in 1940.

Highways that Reindollar named as likely to become toll roads were these: The new road from Baltimore toward York, Pa.; the Baltimore-Washington Parkway; the Frederick-Washington improvement; and the Washington-Annapolis connection. (See p 17.)

• **Studying bond issue**—Upon his return to Baltimore, Reindollar qualified his statements and corrected some of the implications that had arisen from his Washington remarks: Methods are under study, he explained, to permit financing of additional loans after the state issues bonds for the $75,000,000 still remaining out of the $100 million authority voted by the General Assembly in 1947.

The commission has authority, he said, to issue self-liquidating bonds for toll roads, but that idea has been abandoned for the present. The commission's advisory council, he explained, has recommended against it.

Three possible means of raising added revenue are being examined, Reindollar said. First of these is another 1-cent increase in the gasoline tax. The tax was stepped up from 5 to 6 cents three years ago. Another cent would produce about $4,000,000. If the commission got all of this $4,000,000—instead of only half the revenue as at present—the increase would finance about $60,000,000 of added borrowings.

• **Tolls, auto taxes possible**—Second of the sources being considered is increased motor vehicle revenues. As a third possibility, the commission and its advisers are studying tolls on some major highways. These tolls, the chairman explained, would be collected in small charges at stations in strategic spots, as in Westchester County, N. Y. It is not the commission's intention, he said, to convert new sections of the major highways into roads controlled as the Pennsylvania Turnpike is, with toll booths at every ingress point.

If the last possibility should be adopted, Maryland would have to pay back to the federal government the amount of any federal aid that already had been expended on the toll projects. Federal money can be used only on toll-free roads.

Chicago uses 'copter to get water samples

Hereafter, Chicago will use a helicopter to get its samples of drinking water from Lake Michigan for testing. That was the decision of W. W. DeBerard, city engineer, after a successful test.

Leo F. Wyshank, sanitary engineer, dipped 48 samples from 24 locations in an hour and one-quarter. The assignment will be his henceforth, once every two weeks. Formerly, the city got its samples by boat. The trips took 8 to 10 hours. Wyshank used a long, extensible stick, to which bottles were attached, to gather his samples. A rack for the 48 bottles was beside him in the helicopter.

DeBerard said the aircraft not only saves time in obtaining samples but also permits more accurate tests. A fresh sample will have undergone smaller bacteriological change than an older one, such as those gathered by boat.

Housing starts hit record high in March

Builders started more new homes in March than in any month on record. (See pp 19 and 23, this issue.)

The March total of 110,000 nonfarm dwelling units is 59% above last year.

The first quarter total of 285,500 units is 67% over last year and 59% above 1948; it is an all-time record.

BLS has revised its January estimate up from 80,000 starts to 95,500. It has also adjusted the December, 1949, figure from 79,000 to 78,300, making 1949's final total 1,025,000 units.

Cement plant in Virginia

Lone Star Cement Corp. announced this week it will build a new cement plant near Roanoke, Va. To cost about $6,000,000, the plant will produce 1,500,000 barrels yearly. It is to be in operation early in 1951. Walsh Construction Co., New York City, and the Ralph E. Mills Co., Salem, Va., will build the plant. Silos and packhouse will be built by MacDonald Engineering Co., Chicago. Walsh and Mills built the Cloverdale and Catawba Railroad, which will serve the new plant.

Low water pressure is main atomic threat

Scientist tells Illinois waterworks men contamination would pose less serious problem than flames

Water works under atomic attack would find their principal problem in maintaining pressure for fire fighting, not in decontamination.

That's the opinion given the annual meeting of the Illinois Section, American Water Works Association at Chicago last week by W. A. Rodger, of the Chemical Engineering Division of the Argonne National Laboratory.

Rodger discussed three other problems of significance:

1. What radiation level is safe in potable water?

2. What's needed to monitor water supplies?

3. What effect have present water purification methods on radiation?

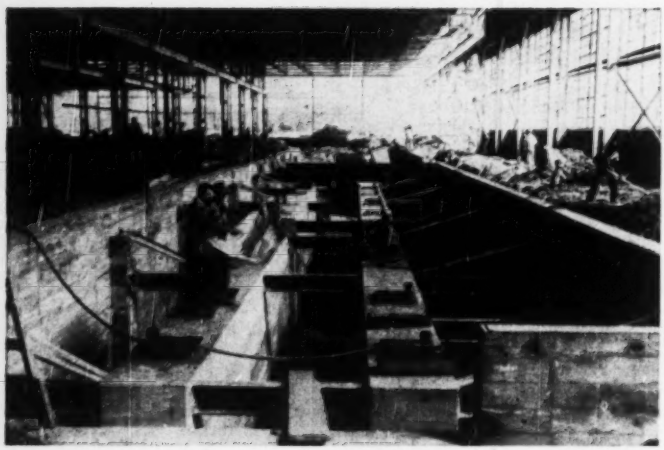
• **No absolute tolerance**—Because radiation can take so many forms, Rodger said, there's no absolute tolerance. Alpha and beta particles and gamma rays—the three basic forms of radiation—complicate matters by having varying energy levels and half-lives. Permissible levels for some isotopes under specified conditions has been worked out. They vary from 1×10^{-7} micro-curies per litre for radium to 6×10^{0} micro-curies for carbon 14. To obtain these for all isotopes would be prohibitive.

Rodger predicted that a general tolerance for a permissible concentration of radioactive particles in water ultimately will be set.

No continuous monitoring devices for low level radiation in waterways exist now, Rodger said, although much effort is being devoted to this. It's possible, although not easy, to assay liquids at these levels by evaporating the sample and using a plating process under aseptic conditions. Even with the best available instruments, water treatment plants which analyze radioactivity of their water should use trained help.

Incomplete experiments show that 80 to 90 percent of most radioactive contamination can be removed by present methods. Such water might be dangerous for drinking for 24 hours after an attack, but it should be safe otherwise. In an emergency, it should be reasonably safe to drink water 1,000 times as radioactive as water normally is.

Treatment of wastes from atomic energy plants is of greater interest, Rodger said. He asserted the Atomic Energy Commission's goal—to discharge no manufactured, active atom back to nature—is practically impossible.



NEW INDUSTRY FOR TEXAS—Foundations for heavy machinery are being built in the new Houston plant of the A. O. Smith Corp. of Texas. The new plant, to be in operation by August, will make large-diameter welded steel pipe for the oil and gas industries. Plant and office building are being built by The Austin Co., Houston and Cleveland. Main plant, to enclose 135,000 sq ft of floor space, will be 200 by 600 ft with a 35-ft clearance under the trusses. It's an entirely new industry for Texas, and one designed to serve industries flourishing in the region.

Site picked for truck weight test

A mile-long section of the Crain Highway, in southern Maryland, is to be the proving ground this summer for one of the more controversial problems in roadbuilding—the effect of heavy truck traffic on concrete paving.

Heralded as the first test of its kind in the country, the experiment will be conducted and financed by the National Highway Research Board, the highway departments of at least nine other states and the federal government.

The test section lies on U.S. Route 301 in Charles County, south of Bel Altom. It's part of a concrete road laid in 1941. Careful examination shows it has withstood successfully normal traffic and seasonal weather changes, with only slight damage. During the test, normal traffic will be detoured around the strip on a highway paralleling it close by.

• **How it's done**—The road is to be divided into four sections, each made up of half the road's length and half its width. On one of these sections, only trucks of a single rear axle, loaded to 18,000 lb, will be permitted. On the section adjoining it laterally, only single rear axle trucks, loaded to 22,400 lb, will be allowed. The third section will carry trucks with tandem rear axles, loaded to 32,000 lb. The fourth, paralleling the third, will be limited to tandem rear axle trucks loaded to 44,800 lb. (Both the upper weight limits are the Maryland maximums. American Association of State Highway Officials prescribes the basic limit of no more than 18,000 lb on a single axle and calculates allowable weights for multi-axle trucks from this basis.)

Trucks involved in the test will operate on an average frequency of one per minute 24 hours daily, seven days weekly. No other vehicles will be allowed on the test strips.

Before the tests start, the detour road, paralleling Route 301, will have to be put into condition and instrumentation of the test strip will have to be finished. There'll be measurements made of surface elevations, stresses and deflections under wheel loads, subgrade conditions and concrete quality. Preliminary test—soil surveys, concrete core tests and surveys of existing road condition, are under way now by the crew which will conduct the tests.

• **Maryland started it**—The test grew out of a suggestion by Maryland representatives last fall at a meeting of the Interregional Council on Highway Transport. Albert S. Gordon, executive assistant to the chairman of the Maryland Roads Commission, was designated as chairman of a special committee to develop details.

Supervising the test will be an executive committee of the National Highway Research Board. Its chairman will be Fred Burggraf, associate director of the board. Its members include Gordon, Director T. J. Kauer, of the Ohio Highway Department; and Deputy Commissioner H. S. Fairbank, of the U.S. Bureau of Public Roads. There'll be an advisory committee representing participating agencies.

Project Engineer will be A. Taragin, on loan to the research board from the Bureau of Public Roads. Cooperating states, in addition to Maryland, include Connecticut, Delaware, Illinois, Kentucky, Michigan, Ohio, Pennsylvania, Virginia and Wisconsin. Bureau of Public Roads represents the federal government.

Begin $7.5 million military housing job

Foundation work has started at El Paso, Tex., for the $7,500,000 Van Horne Park housing project—an 800-unit development to house families of officers and enlisted personnel assigned to Ft. Bliss.

The project is the second to be authorized under the so-called Wherry Act, approved by the U. S. Congress last August as Public Law 211. The law adds a new Title VIII to the National Housing Act to provide additional incentive through FHA mortgage insurance for rental housing on or adjacent to military installations. The act permits the armed forces to lease portions of military reservations, and to furnish utilities on a long term basis for such housing.

Fort Bliss at El Paso is a part of the nation's largest military installation. Headquarters of the Army's anti-aircraft training program, the fort now has a complement of 35,000 troops. In addition to this large Army post, El Paso is also site of Biggs Air Force Base, a major Air Force installation; and the William Beaumont General Hospital.

The project will consist of 24 quadruplex apartments, 58 duplexes and 188 single houses. The housing construction will include six types of units and more than 20 variations. Aluminum window sash will be used throughout, and each dwelling unit will be equipped with individual hot air heating system and duct systems for individual evaporative air conditioning system. A shopping center, and community facilities including laundry will be provided.

Developers and builders are two El Paso firms, Morgan Co., Inc. and Leavell and Ponder, Inc., both formed to undertake the job. Otto Phillips, of Dallas, is project and site planner, and Charles E. Armstrong, of Fort Worth, is the architect.

ARBA picks Reybold to replace Upham

Lt. Gen. Eugene Reybold, wartime Chief of Engineers, U. S. Army, took over April 17 as full-time manager of the staff and activities of the American Road Builders Association, in Washington. His appointment to the new post of executive vice president was announced last week by Enoch R. Needles, New York, ARBA president.

Reybold succeeds Charles M. Upham as executive head of ARBA. Upham retired early in March after 24 years as engineer-director of the association (ENR March 9, p 17, and March 23, p 75).

• **Policy meeting soon**—ARBA directors expect to hold an early meeting to consolidate the association's position on highway issues. All divisions of the association are reported to be solidly behind the new executive head in carrying out plans to increase the effectiveness of the whole organization.

At the meeting, directors plan to restate ARBA policies and to reaffirm the principles on which the association stands. This declaration presumably will clarify some points that have become slightly clouded in recent weeks —such as the ARBA position on toll roads.

Reybold was recommended for his new position by a seven-man selection committee appointed from the board of directors at the ARBA annual meeting last month in Cincinnati, where Upham retired. Six members of the committee met in Washington to consider candidates and to interview several men. The committee's recommendation was referred by telegram to the rest of ARBA's directors for confirmation before President Needles announced the appointment.

• **Long military career**—Reybold, a veteran of both world wars, began his army career in 1908 as a lieutenant in the Coast Artillery. After serving as a colonel in World War I, he transferred from the Coast Artillery to the Corps of Engineers with the permanent rank of major in April, 1926. With the Corps of Engineers, he served as district engineer at Buffalo, N. Y., Wilmington, N. C., and Memphis, Tenn., and as division engineer at Little Rock, Ark. Other tours of duty took him to Virginia, Washington, D. C., and the Philippines.

A civil engineer graduate of the University of Delaware, Reybold is a member of the American Society of Civil Engineers and of the Society of American Military Engineers. He was awarded the Distinguished Service Medal in World War I and an oak leaf cluster in World War II. Reybold retired from the army in 1946. He is 66 years old. Recently, he served as vice president in charge of operations for the Lustron Corp., Columbus, Ohio, until the RFC began foreclosure proceedings against that concern at the end of February.

Lt. Gen. Eugene Reybold

West Virginia court rule hits interstate compacts

Attorneys general of eight states signatory to the Ohio River Valley Water Sanitation Commission agreement were to meet at Columbus this week to consider the effect of a West Virginia Supreme Court ruling which disallowed payment of state funds to the commission.

The ruling threatened another interstate anti-pollution group—the Interstate Commission on the Potomac River Basin. Officials of that group said they would present the state's bill for the next fiscal year, even though West Virginia Auditor E. B. Sims said he plans to withhold the money.

West Virginia delegates to the Ohio body indicated they would seek a rehearing on the court's contention that the pact delegates state powers unlawfully and binds succeeding legislatures to specific appropriations. The court added, in part:

"To the extent that such power can be reserved to us within our borders, we can and probably should cooperate in the purposes which the . . . commission was designed to promote. But the proposed legislation goes too far and surrenders too much."

The ruling arose from a suit by West Virginia delegates to force Sims to make payments to ORVWSC.

Bricklayers substitute pension for pay rise

Agreement indicates New York City building trades stabilization pact may be extended for two more years

Prospect that Greater New York City can continue the wage stabilization program within the building trades which it has enjoyed for more than two years seemed good this week. The AFL bricklayers union has accepted a new two-year agreement, expiring May 31, 1952, which provides no increase in hourly pay but establishes what is described as the first pension in U. S. history established by contractors of bricklayers.

Actually, the bricklayers are not part of the formal stabilization agreement negotiated in January, 1948, by the Building and Construction Trades Council, AFL, and the Building Trades Employers' Association, (ENR Jan. 8, 1948, vol p 23). But their contract has conformed to the pattern of the agreement. And their acceptance of a continuation of the contract is believed indicative of a similar mood on the part of other unions party to the program. The bricklayers agreement followed, by several weeks, acceptance by the electricians' union of a contract with no wage increase.

• **Details remain open**—Numerous details, particularly those affecting the amount of the pensions, remain to be worked out. The agreement, also provides these things:

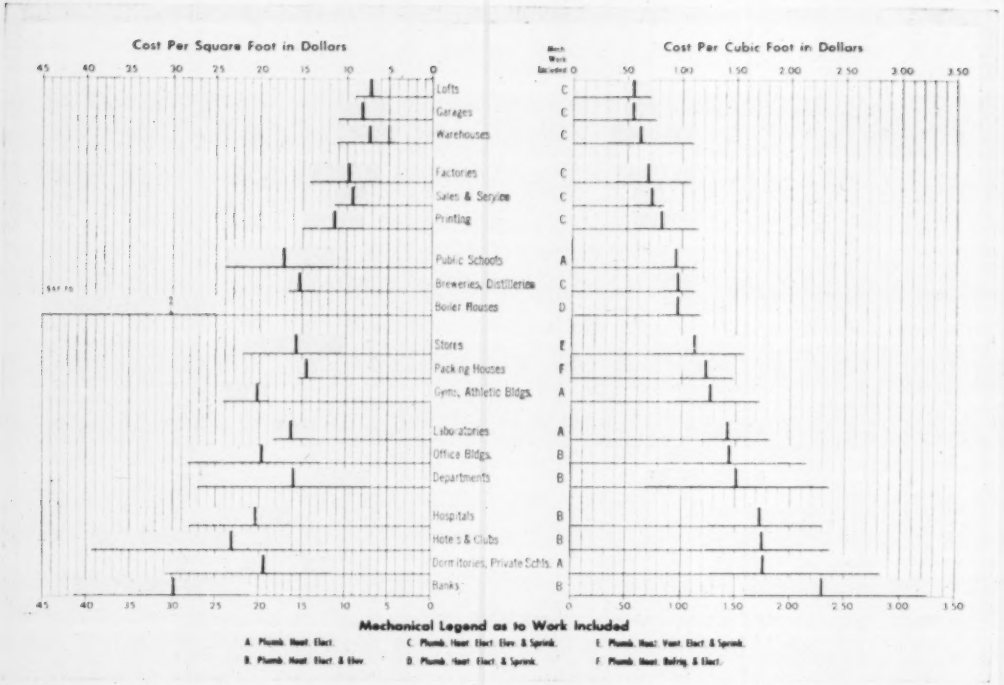
1. Upward revision of wage rates if the cost of living (BLS index) for May, 1951, is more than 10 points above its May, 1950 level. Any wage increases as a result of this change will be point for point beyond a 10 percent increase in living costs, but would not cover the 10 percent. Such increases would be effective only for the year following May, 1951.

2. Employers will contribute, starting Jan. 1, 1951, 10 cents per hour per bricklayer employed under the agreement. Covered are seven union locals in New York City, Nassau County and part of Suffolk County, both on Long Island.

3. The union's welfare fund, financed by 3 percent of payroll contributions by employers, will provide payments to the New York State Disability Insurance Fund which will become mandatory July 1.

4. Certain adjustments will be made in working conditions, including safety, which will not affect the cost of construction.

Negotiations are now underway on renewal of the formal stabilization agreement with other building trades unions. That agreement expires June 30.



HOW MUCH SHOULD A BUILDING COST?—J. P. H. Perry, consultant to the Turner Construction Co., told members of the New York Chapter, American Institute of Architects that if they must guess the cost of a proposed building, this chart would be helpful. Prepared by C. F. Rosenburgh, Turner's chief estimating engineer, it indicates the range in cost, and the average, for 19 types of buildings built by Turner. Costs have been adjusted to February, 1950, New York City conditions. However, Perry warns, it would be a lot safer to ask a contractor whenever a reasonably accurate estimate is needed.

To erect 437-ft towers for Central Valley line

Construction of towers for the 230-kv power transmission line from Shasta to Tracy, Calif., will mark successful completion by the Reclamation Bureau of one of its most vigorous attempts to expand its Central Valley power system.

Macco Corp., of Paramount, Calif., was low bidder on four towers for crossings of the Sacramento and San Joaquin Rivers near Rio Vista. Its bid was $432,990.

Two of the steel towers to be erected by the Bureau of Reclamation for the major Central Valley Project transmission crossing will be 437 ft high and 80 ft square at the base to support the 3,810-ft span across the Sacramento River. The two towers for the narrower San Joaquin crossing will measure 337 ft. Towers this high are necessary to provide a minimum river navigation clearance of 140 ft above high water elevation.

The CVP 437-ft tower tops by 54 ft the 383-ft structure built by the Pacific Gas & Electric Co. in 1948 for the Carquinez Strait over-water span near San Francisco. The Carquinez span, however, measures 4,805 ft.

Principal items are designing, furnishing all materials, and erecting the four river crossing towers and four 121-ft steel anchor towers. Other items in the schedule include 2,600 cu yd of excavation for tower footings, furnishing and driving 24,000 lin ft of treated timber piles, furnishing and handling 2,250 bbl of cement, furnishing and placing 80 tons of steel reinforcement bars, and placing approximately 1,600 cu yd of concrete for tower footings. The stringing of the six aluminum conductors on the Sacramento and San Joaquin River crossing towers will be performed under another contract.

Specifications are being prepared for two remaining portions of the West Side transmission lines: the 66-mi Arbuckle-Madison section and the 26-mi between Rio Vista and Tracy. The West Side lines are slated for completion by July, 1951, when initial integrated Central Valley Project operation is to begin.

City sued for permit to develop property

Vernon, Cal., in the heart of the Los Angeles manufacturing district, found itself the target for another damage suit, following earlier difficulties with the Los Angeles Board of Public Works which resulted in jail sentences and fines for all five of its city councilmen. (ENR Feb. 2, p. 53).

This time, an investment company sued the city for $950,000 damages, charging it was refused a building permit on a piece of property by the city without proper reason.

Consolidated Pacific Investment Co. obtained a temporary injunction and sought a mandatory injunction compelling the city to issue permits for development of the property.

Still pending in a District Court appeal is whether Mayor John Leonis and four councilmen will go to jail for five days and pay $500 fines each after being found guilty in Superior Court of failing to pay Vernon's share of Los Angeles' Hyperion sewage disposal project.

Contractor works around the clock on Colorado water tunnel restoration

Digging on new bore to bypass collapsed irrigation tunnel began 11 days after collapse—June 1 deadline carries big penalties

Working around the clock on a 7-day-per-week schedule, a 200-man crew of the Grafe-Callahan Construction Co. is racing against time to bring water back to the Grand Valley Project in Colorado. Crops on 30,400 acres are likely to be lost unless the Grand Valley highline carries water to irrigation ditches by June 1. The Value of threatened trees and crops is estimated at nearly $3,000,000. (ENR March 30, p 22).

A contract to drive a new 13x13-ft tunnel 2,200 ft through sandstone was let for $609,800. The new tunnel is to bypass the crushed section of a 20-year-old tunnel which was destroyed March 8 by slippage of a 600-ft section of a mountain near Cameo.

• **Work started in 11 days**—Grafe-Callahan was awarded the Reclamation Bureau contract March 17 at Denver. Crews under Project Manager B. A. Peters were at the tunnel site March 19—with equipment escorted over the Utah-Colorado line by Colorado State Police.

Using jumbo drilling rigs and a pair of air-powered muckers, crews under tunnel supervisor Ray Blassongame cut an adit 100 ft deep into the mountainside, intersected the old concrete tunnel and punched 30 ft beyond in 7 days. Meanwhile, another heading was 20 ft into the mountainside in the softer ground at the upper end of the new tunnel. There, work was slowed somewhat by the need to place steel timbering until safe ground is reached.

Equipment rushed in included 24 compressors, rail, battery locomotives, jumbos, ventilating lines and portable shops. The highway caravan moving the equipment was termed one of the largest ever seen in Colorado.

• **Railroad fears seepage**—Some objection has been reported on the part of officials of the Denver & Rio Grande Western Railroad to Reclamation Bureau plans to put water through the unlined tunnel this summer to save Grand Valley crops. Admitting the need for speed, rail officials feel seepage that may result might cause new difficulties through slippage of the mountainside towards Rio Grande main line tracks which pass at the foot of the trouble spot. Engineers at the scene report a possibility the new bore thus may be gunited as it is driven, to guard temporarily against possible seepage. The old Grand Valley highline, and the new bore that will be a link in the system, carries 800 sec-ft of water from Grand Valley Dam on the Colorado River 3 mi above Cameo.

CLOCK WATCHES WORKERS—Because of stiff penalty clauses to insure completion when irrigation water's needed, clock watching is vital on this job. Here, workmen using an air-powered mucker have intersected the collapsed Grand Valley tunnel and push on toward the site of the 2,200-ft bypass they must dig by next June 1.

Heavy penalties are involved in the job, which has a May 28 completion date. If water is not flowing June 2, Grafe-Callahan will be penalized $7,500, and if water is not flowing July 1 the penalties will total $175,000.

California views toll road

Investigation of the feasibility of a high speed toll highway between Los Angeles and San Francisco has been authorized by the California Legislature.

Both the Assembly and the Senate adopted a resolution requesting the survey be made by the State Division of Highways. The division is requested to complete its report by next Jan. 15.

In urging the study, legislators asked to be informed of its feasibility both from engineering and financial standpoints, and on the possibility of issuing revenue bonds to be repaid from tolls—to finance it.

Arkansas University plans medical center

Floor design unusual for hospitals—Medical and nursing school structure, large clinic also planned at Little Rock

University of Arkansas, Little Rock, plans to start construction next fall on a large medical center which will embody a hospital, medical and nursing school and an outpatient clinic.

The work will be done in stages, with the clinical building and a portion of the hospital built first. Final floors of the hospital and the education building will come later.

In the hospital, typical floors will contain a series of three 25-bed nursing units, each of triangular shape. All patient rooms will face either south or east, and a nurse's station will be in the center. This design, the architects say, will eliminate the traditional long halls of hospitals, save space and increase nursing convenience. Stairs, elevators and dumbwaiters connecting all floors will be concentrated in a central core, whence direct access may be had to each nursing unit. This will make it possible to isolate individual nursing units completely when necessary without isolating the remainder of the floor.

• **Planned for 600 beds**—Ultimately, the hospital is to be 11 stories high, with a 600-bed capacity. Initial construction is planned for eight stories and a 400-bed hospital. Ultimate capacity of the hospital and clinic will be 15,000 bed patients and 100,000 outpatients yearly. The educational facilities should be able to graduate 100 physicians yearly plus a large class of nurses.

Clinics and adjunct facilities will occupy a large amount of ground floor space in the hospital, plus an adjoining one-story building. Specific clinics will occupy a series of wings connected by a corridor for patients along one end and a corridor for doctors and nurses on the other. This arrangement is expected to end cross traffic and raise efficiency.

The medical education building will be a seven-story wing of the hospital.

Financing now available includes $1,300,000 in state funds, $500,000 in a bequest for a pediatric center, which will be part of the hospital, and $3,600,000 of federal funds under the Hill Burton Act.

Erhart, Eichenbaum and Raneli, of Little Rock, and Edward D. Stone, of New York City, were architects. Dr. A. C. Bachmeyer, clinic director for the Arkansas University Medical School, served as a consultant on the designs. Contracts are expected to be let about Nov. 1.

CONSTRUCTION BUSINESS

April wage hikes average 10c an hour

Contracts signed so far this month call for wage hikes averaging about 10 cents an hour.

Baltimore and Boston workers obtained increases of 10-15 cents; Kansas City unions settled for 5 cents now and 2½ cents more October 1. Cleveland workers a month ago got a 12½ cent raise.

Contracts signed elsewhere this month range from no increase for New York City electricians up to 10-15 cents in some western cities.

Contracts run for two years in Kansas City and Boston.

• **Kansas City**—Kansas City building trades have settled for a 5-cent raise effective April 6 and 2½ cents more on October 1. The new contracts run for two years for 20,000 workers in fifteen K. C. crafts. The truck drivers' contract is for only one year.

The new rates effective April 6 include: $2.80 an hour for plasterers; $2.65 for bricklayers; $1.62 for laborers, and $1.50 for light truck drivers. Hoisting engineers' rates range up to $2.42 an hour.

• **Boston**—Four Boston building trades have obtained raises of 10-15 cents an hour. Massachusetts highway construction laborers get a 7½ cent raise now and 5 cents more next year. All contracts run for two years.

Building laborers get a 10-cent increase to $1.75 an hour; electricians are up 10 cents to $2.60, and bricklayers and stone masons are up 15 cents to $2.774.

• **Baltimore**—Baltimore laborers, plumbers, sheet metal workers and composition roofers last joined the rest of the local unions in a 10-15 cent general increase, effective April 5. All unions in the area obtained raises averaging 7-8%.

Hourly pay of laborers is up 10 cents to $1.35 an hour; plumbers are up 15 cents to $2.40, sheet metal workers up 15 cents to $2.40 and composition workers up 15 cents to $2.00.

• **New York City**—New York Local No. 3 of the International Brotherhood of Electrical Workers has agreed to maintain the existing basic wage rate of $3.00 an hour for a seven-hour day.

This is the first of the N. Y. City building trades to maintain the pattern of the wage stabilization agreement which expires June 30. The contract remains in force until December 31 this year.

Only actual increase in labor costs to the employer is absorption of the 0.5% rise in social security payments.

• **Madison, Wis.**—Unions in Madison, Wis., have settled for increases of 10-15 cents. Laborers and masons are on strike throughout the Fox River valley demanding more than the 10-cent raise offered them. This has tied up about 7,500 workers in the area, although most skills have already settled.

• **Columbus, Ohio**—After a two-day strike, Columbus laborers and hod carriers accepted a 7½ cent raise. New rates for laborers is $1.50 an hour; hod carriers get $1.70.

• **Portsmouth, Ohio**—Portsmouth, Ohio laborers and hod carriers also got a 7½ cent increase—laborers to $1.35 an hour, hod carriers to $1.50.

• **Milwaukee**—Milwaukee general construction workers have obtained a 10-cent increase to $1.75 an hour. Plasterers get a 25-cent raise to $2.50.

Pay increases averaged 10½ cents last year

Major wage negotiations in the construction industry last year brought increases averaging about 10½ cents an hour to at least 85,000 employees, a Bureau of Labor Statistics study shows.

About 6,000 workers who got increases last year were promised another boost this year or next year.

Few "fringe," or supplementary, benefits were granted. Most prevalent were new or improved health and welfare funds. Only 5% of the construction workers covered by 1949 wage changes got health and welfare funds. Other fringe benefits went to only a scattering of workers.

Regionally, the average increase varied from the national average of 10½ cents. It was 8½ cents in the far west, 11 cents in the midwest, 11½ cents in the south, 12½ cents in the Middle Atlantic States and 13 cents in New England.

Many contracts were not reopened last year. Others, covering 140,000 workers, were renewed without any change in wage rates.

Fringe benefits, other than health and welfare contributions, are not as important in the construction industry's wage structure as they have been in other industries, BLS noted. Only 2,000 construction workers last year obtained new or improved payments for holidays. Just as few got new or improved vacation plans.

New or additional employer contributions to health and welfare plans covered approximately 58,000 workers.

Construction wage increases during 1949

Increase Per Hour	Affected Workers
Less than 4 cents	38,000
4 to 5.9 "	106,000
6 to 7.9 "	96,000
8 to 9.9 "	126,000
10 to 11.9 "	175,000
12 to 13.9 "	125,000
14 to 15.9 "	69,000
16 to 19.9 "	62,000
20 cents and over	48,000

These are the findings of the Bureau of Labor Statistics from a study of all wage settlements involving at least 200 workers which came to its attention during the year from its own surveys, copies of contracts, newspaper clippings and other sources.

Construction strikes increased in 1949

The 615 construction strikes that occurred last year outnumbered strikes of any other industry; they were almost double previous postwar years, while strikes in other industries were fewer than in any other postwar year. But man days lost were not any more than in 1947.

Man days idleness

	All Industries	Construction
1944	8,721,029	115,893
1945	38,025,000	147,000
1946	116,000,000	1,850,000
1947	34,600,000	2,270,000
1948	50,300,000	2,760,000
1949	34,700,000	1,430,000

Number of Strikes

	All Industries	Construction
1944	4,956	168
1945	4,750	266
1946	4,958	351
1947	3,693	382
1948	3,419	380
1949	3,606	615

While there were 94 jurisdictional strikes, more than in any other postwar year, man days lost did not come close to the 1947 figure.

Average amount of work lost on each jurisdictional strike in 1949 was only 7 man days, compared with 72 man days lost per strike in 1947 and 6½ man days in 1948.

Jurisdictional Strikes

	Strikes	Workers Involved	Man-Days Idleness
1944	70	17,500	56,600
1945	72	89,100	645,800
1946	50	16,900	110,000
1947	62	9,100	658,000
1948	52	4,200	27,200
1949	94	20,300	143,000

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 78, went to press.)

Hotels—Hotels Statler Company, Inc., New York, will open bids May 15 for the construction of $10,000,000 Statler Hotel in Los Angeles, Calif. Holabird & Root & Burgee, Chicago, are architects. Steve B. Barnes, R. S. Kadow and Mark F. Deering, Los Angeles, are associated architects.

Military Installations—U. S. Engineers, Anchorage, Alaska, awarded contracts for military installations at Anchorage to J. H. Pomey Co., Inc., San Francisco, $2,685,795, and for similar work at Fairbanks, to Morrison-Knudsen Co., Inc., Boise, Idaho, and Peter Kiewit Sons' Co., Seattle, $3,113,113. Low bids were received April 12 for same type of work at Naknek, from Grasland Construction Co., Bellingham, Wash., $1,766,677.

Apartment—Fort Tryon Apartments, Inc., New York, will construct apartment in New York by own forces. Estimated cost is about $3,000,000. Gustave W. Iser, New York, is architect for the apartment project.

Department Store—Hecht Co., Washington, D. C., plans department store at Arlington, Va. Total cost of project will be $6,000,000.

Housing—Hartford Housing Authority, Hartford, Conn., has preliminary plans underway for housing to cost $5,700,000. The authority has just awarded contract for the construction of Rice Heights Housing Project to Anderson Fair Oaks Construction Co., Hartford, at $1,250,000. Kane & Fairchild, Hartford, are architects for both jobs.

Hospital—Public Buildings Administration, and U. S. Health Service, San Francisco, will take bids May 16 for constructing U. S. Marine Hospital at San Francisco to cost about $3,500,000. Douglas D. Stone and Lou B. Mulloy, San Francisco, are architects for the Marine Hospital.

Pumping Stations—Bird Construction Co., Ltd., Regina, Sask., has been awarded contract by Interprovincial Pipe Line Co. (Imperial Oil Ltd.), Toronto, Ont., to construct pumping stations at various points along interprovincial pipe line. Estimated cost is $2,500,000.

Viaduct—Merritt-Chapman & Scott Corp., Boston, Mass., was low bidder at $2,709,951 for viaduct from Moon Island to Long Island, Boston Harbor, when Department of Institutions, City of Boston, opened bids April 11. Crandall Co., Boston, is consulting engineer.

Housing—Housing Authority, City of Worcester, Mass., plans constructing Great Brook Valley Housing Project to cost about $5,000,000. Samuel Glaser, Associates, Boston, are architects for the housing project.

Water Tunnel—Bureau of Water Supply, City of Baltimore, awarded contract for lining Patapsco-Liberty Road Water Tunnel to Samuel R. Rosoff, Ltd., Baltimore, $2,866,000.

Sewers—Horner & Shifrin, consulting engineers of St. Louis, have been retained to make survey for storm water sewers in River Des Peres Watershed for University City, Mo. Estimated cost is $2,400,000. The same engineers have also designed storm and sanitary sewers for City of East St. Louis, Ill., for which a bond issue of $2,500,000 has just been voted.

Department Store—Westlake Construction Co., St. Louis, has been awarded contract for department store in St. Louis by the May Department Stores at about $2,500,000. J. John Hoener is architect. William C. E. Becker is structural engineer and John D. Falvey is mechanical engineer. All are in St. Louis.

Fine Arts Building—Yale University, New Haven, Conn., plans constructing wing for Fine Arts Building to cost $2,000,000. Philip L. Goodwin, New York, is architect.

Ferry Terminal—Grove, Shepherd, Wilson & Kruge, Inc., New York, is low bidder at $1,090,190 for constructing viaduct and main terminal building, Section 2, at St. George Ferry Terminal, Staten Island. Commissioners of Marine & Aviation, City of New York, opened bids.

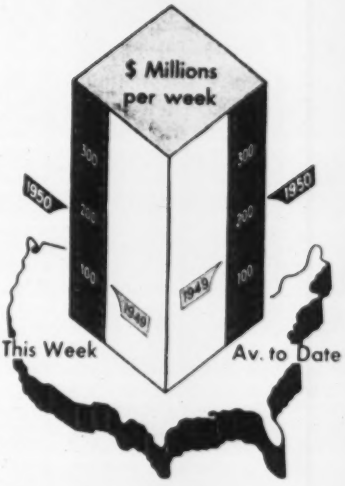
Race Track—Thoroughbred Racing Association, Las Vegas, Nev., awarded contract for the construction of race track grandstand and club house at Las Vegas to McNeil Construction Co., Los Angeles, Calif., $1,000,000. Arthur Froehlich and Paul R. Williams, Los Angeles, are architects.

Bridge—New York Central System, Chicago, received low bid for building superstructure for bridge over Cuyahoga River at Cleveland, from Mount Vernon Bridge Co., Mount Vernon, O. $1,106,395. Bates & Rogers Construction Co., Chicago, was low on substructure at $432,034.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Apr. '50	491.95	236.47
Building Cost	Apr. '50	362.78	196.11
Volume	Mar. '50	351	154



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Apr. 20 1950	Cumulative (16 wks.) 1950	Cumulative (16 wks.) 1949	% chge
Federal	$12.2	$464.1	$347.3	+34
State & Mun.	67.8	907.8	806.2	+12
Total Public	$80.0	$1,371.9	$1,153.5	+19
Total Private	105.8	1,889.1	1,162.7	+63
U. S. Total	$185.7	$3,261.0	$2,316.2	+41

Contracts by type of work

	Tl.ls Week	Cumulative (16 wks.) 1950	Cumulative (16 wks.) 1949	% chge
Waterworks	$5.0	$80.1	$43.4	+85
Sewerage	5.7	71.9	69.0	+4
Bridges	10.9	96.9	106.2	-9
Highways	24.3	298.1	167.8	+78
Earthwork, Waterways	5.9	123.8	179.5	-31
Buildings, Public	24.1	592.2	511.9	+16
Industrial	14.6	327.6	227.7	+44
Commercial	79.7	1,404.2	722.2	+95
Unclassified	25.1	266.3	178.5	+49

NOTE: Minimum size projects included are: Waterworks and waterway projects, $25,000; other public works, $50,000; industrial buildings, $65,000; other buildings, $250,000.

New capital for construction

	Cumulative (16 wks.) 1950	Cumulative (16 wks.) 1949	% chge
Corporate Securities	$582.4	$779.4	-25
State and Municipal:			
Excl. Housing	580.4	578.1	...
Housing	198.8	215.4	-7
Total Capital	$1,361.7	$1,572.9	-13

Designing and Operating Septic Tanks for Homes

Here are the first major findings and conclusions arising out of a comprehensive investigation into all phases of septic-tank practice. Source is the Federal Security Agency's first report "Studies on Household Sewage Disposal Systems."

SANITARY ENGINEERS—long concerned with design and operation of household sewage systems—now can turn to fact-based guides for better practice. The guides have been developed in a comprehensive investigation into all phases of individual household disposal systems. First stage findings are spelled out in a U. S. Public Health Service report.

Septic-tank design factors—which the USPHS believe are warranted as the result of the study—cover: Suburban-residence water consumption; functions of septic tanks; criteria for successful tank performance; average per-capita sludge accumulation; type of tank outlet; effect of sludge and yeast on digestion; sewer freezing and tank corrosion. Some findings are:

- **Water consumption** – Mean per-capita water consumption from 170 single-family residences—49 and 39 gpd in summer and winter.
- **Functions of household septic tanks**—Settling, digesting, sludge-storage.
- **Criteria for septic tank performance**—Based solely on suspended-solids reduction (other factors, as yet undelineated, may be important) it appears:

a. Uncompartmented tanks of rectangular, oval and circular shape of about the same capacity and depth vary little in efficiency. Variations in shape and depth, within reasonable limits, appear to affect efficiency only slightly if tank capacity is adequate.

b. Compartmentation is desirable. The study is not conclusive as to how it should be provided or as to optimum shape, size or number. Provision for cleaning of each compartment must be made.

c. No unequivocal conclusion can be drawn as to minimum design capacity for septic tanks. Tanks are seldom cleaned until trouble develops. Ample capacity must be provided to assure trouble-free periods of reasonable length and to prevent frequent and progressive damage to the effluent absorption system due to sludge discharge from the tank. For these reasons, a minimum tank capacity of 500 gal. is recommended.

- **Average per-capita sludge and scum accumulation**—Data from 205 septic tanks of various shapes and sizes, serving single-family residences in various parts of the country showed that—during first five or six years after start of operation or cleaning—average per-capita accumulation of sludge and scum can be estimated from the formula:

$$V = 17 + 7.5\ Y$$

in which

V = volume of sludge and scum in gallons per capita

Y = years of service since cleaning.

This equation holds for tanks with about 125-gal liquid capacity. Larger solids accumulation may be expected in larger tanks, smaller accumulations in smaller ones.

- **Tank outlets**—No significant difference in performance between a standard tee and baffled-weir outlet (Fig. 1) was found in a limited study of 500-gal rectangular tanks.
- **Yeast in sewage**—Addition of yeast does not appear to accelerate sludge digestion. Seeding of tanks with digested sludge is advantageous.
- **Freezing of sewers**—Carefully constructed household septic-tank systems with gravel-packed tile lines and insulation of pipes under driveways will rarely freeze if kept in continuous operation. This applies even if tiles are laid above frost-penetration level.
- **Corrosion of tanks**—It is most severe at and above water line. Concrete—particularly pre-cast—and vitrified tile and brick stand up well. Because steel appears to have a short useful life expectancy, need for development of effective protective coating for steel is indicated.

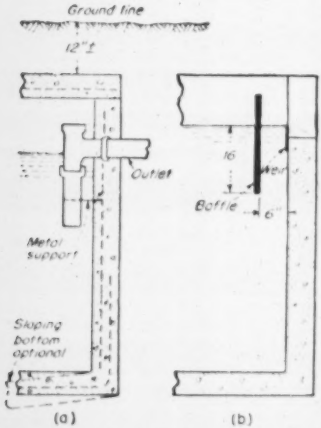


FIG. 1. STANDARD-TEE (a) and baffled weir outlets for septic tanks have equal performance ratings.

Septic Tanks Operated Experimentally . . .

Design-factor observations are based on carefully controlled and evaluated operation of 18 tanks during a 12-month period (Table I). Tanks were tested on a single site with an available supply of fresh domestic sewage. Raw-sewage characteristics for the first part of the study are generally representative for the entire test (Table II).

- **Controlled operation** – Digesting sludge from field tanks was added to test units—about 10% of tank volume—for seeding. Tanks were dosed eight times a day (Fig. 2) with measured amounts of raw sewage from a central chamber equipped with a mixer. Dosages were based on water use measurements made at homes of the research staff. Initial feedings of 500 gpd were followed by 250-gpd dosings. Raw-sewage samples were collected and composited by volume fed to tanks. Effluents were collected, stirred and sampled. Samples were composited by volume and refrigerated.
- **Temperatures**—Sewage temperatures ranged from 4-10 deg C in winter and 20-28 in summer. Corresponding air temperatures were: 5-20 and 20-41.
- **Testing**—Raw sewage and effluents were examined each morning for solids, occasional BOD, sulfides, grease ammonia and chlorides. All data were summarized, and removals and efficiencies were computed both on a weekly and overall basis at several points in the tests. Results were tabulated daily, twice weekly, or weekly, depending on sample compositing time. Total solids, total volatile solids, suspended solids, and volatile suspended solids were then computed from the results. Summation of these values yielded weekly and overall removals of TS and SS by each tank and a means of computing tank efficiencies.
- **Operating efficiencies**—Considerable difference in operating efficiencies—on basis of SS reduction—are revealed for

the variously shaped and sized tanks. Highest efficiency was given by Tank 4 (Table I). Tanks 1 and 3 gave nearly the same performance.

The five single-compartment 500-gal tanks produced overall efficiencies of about the same magnitude. But there were differences in individual runs and considerable variations in normal operating life (point at which sludge discharges) indicated by sludge accumulations.

Circular shapes in series (compartmentation) provided consistently a higher degree of SS reduction than any single-compartment tank of about the same capacity.

• A fairly high SS removal was provided during three runs on a 24-in. 123-gal vertical-cylindrical unit, two such tanks in series, and a 24-in. 3-compartment, 289-gal. horizontal cylinder. This performance was at 250-gpd dosings. Normal operating life of these tanks appeared to be very short as compared to the 500-gal units.

• **Sludge inlet**—Introduction of raw sewage through sludge is indicated as a result of apparent improvement in solids reduction efficiency as sludge accumulates.

• **Grease removal**—Grease removals of 71 to 92% were obtained. Raw-sewage grease concentration was about 100 ppm—fairly representative of municipal wastes.

In-Service Sludge and Scum Accumulation . . .

A total of 300 single-household septic tanks in normal operation in nine U. S. areas were examined by two-man engineer-laborer teams between Feb. 1947 and July 1948.

Data collected covered house occupancy, water consumption, waste origin, septic tank condition and life, sludge and scum accumulation rates, and scum buoyancy. Specific findings and conclusions are:

• **Household statistics**—For 296 households, number of bedrooms per dwelling was 2.49 and number of persons per bedroom 1.5. Metered water usage at 170 homes averaged 49 gpd in summer, 39 in winter.

• **Structural condition and life**—Corrosion was most severe at and above the water line. Pre-cast concrete, tile and brick generally stood up well for 20 yrs or more; poured-in-place concrete for at least 10 yrs; and steel for a seven-year useful life. Wood baffles in some tanks up to seven years old were sound.

• **Sludge and scum accumulations**—Average accumulation rates were about 3.4 cu ft per capita during first year (Fig. 3). This dropped to about 1.34 after six or seven years and then continued at same rate. On this basis, twice one-year effective scum and sludge storage capacity would probably extend cleaning intervals to 4.5 years; three times to seven years. The 205 tanks screened out for this observation satisfied the criteria: A single household served, a reasonably accurate history, tank not full of sludge and scum, and outlet device was intact.

• **Scum layer**—About 27% of the total thickness lies above the water line (150 tanks).

• **Accumulations vs. waste received**—Scum and sludge accumulations for 80 tanks receiving all types of household wastes averaged 0.15 cu ft per capita annually more (11 percent) than average rates for 62 units receiving bathroom wastes only.

• **Capacity vs. accumulations**—Average solids accumulation for 205 tanks was in the 125- to 175-gal per capita group of tanks. Less solids built up in smaller tanks, more in larger ones.

• **Depth vs. accumulation**—Solids accumulation appears to increase with depth but influence of capacity is not eliminated from this examination.

Sludge and Yeast as Digestion Starters . . .

Laboratory investigations—to attempt to answer the question, "How much digested sludge should be added to a digestion (septic) tank for seed purposes,"—were carried out. Also studied was effect of adding yeast to stimulate digestion.

Ranging from 0.5 to 20% by volume, digested sludge was added to a series of bottles which were then filled with raw sewage. Digestion was then allowed to proceed at room temperature (Fig. 4).

Total solids, TS ash, TS volatile, pH, loss in TSV, milliters of gas and milliters of gas per gram of volatile matter destroyed were measured for sewage, sludge and sewage-sludge mixtures. Gas production was the principal parameter for sludge digestion.

Summarized, the experimental findings are:

• **Speeding up digestion**—A sewage

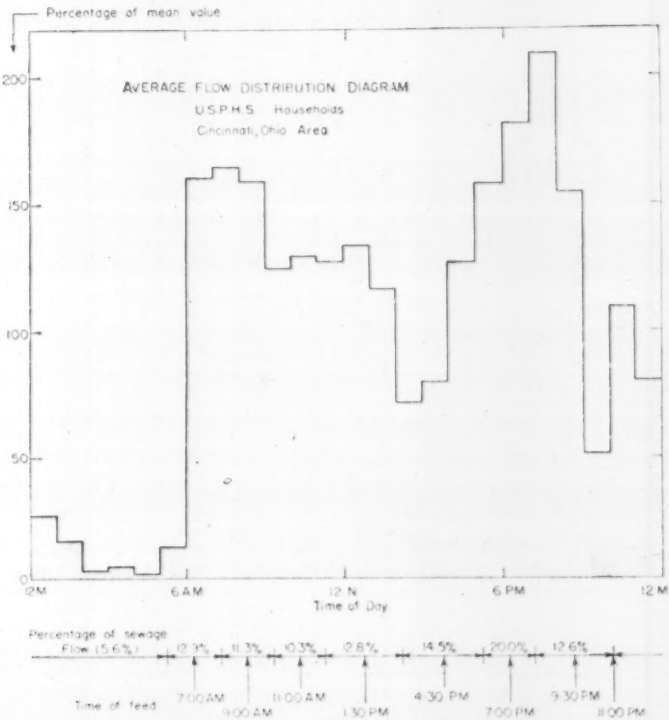


FIG. 2. DAILY FEEDINGS to septic tanks were based on average water usage at staff member's homes. Recording instruments on water meters were utilized to collect data.

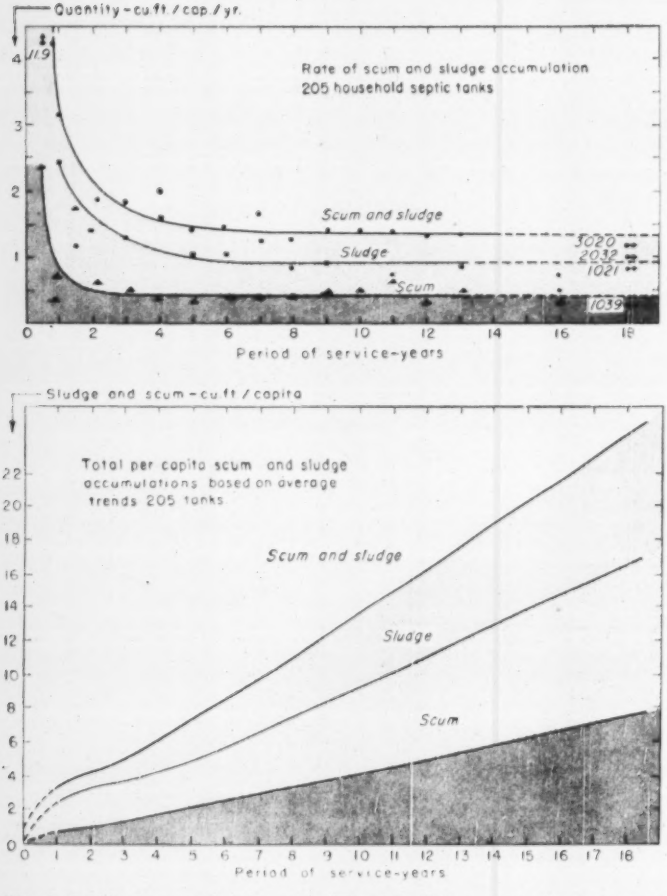


FIG. 3. RATE of scum and sludge accumulation is rapid immediately after tank is put into operation but it begins to level off after one year (top). Total per capita accumulation increases almost uniformly.

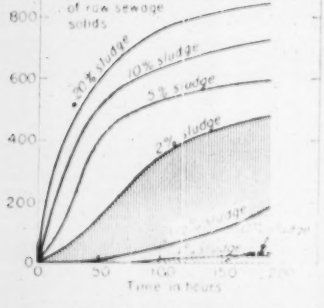

Milliliters gas per gram volatile solids added
Effect of varying seed concentration in the digestion of raw sewage solids
20% sludge
10% sludge
5% sludge
2% sludge
Time in hours

FIG. 4. GAS PRODUCTION is stepped up when ripe sludge is added to septic tanks preparatory to starting the tank operation.

volatile solids to ripe sludge volatile-solids ratio—1 to 44—reduces lag in start of digestion (Bottle experiments).

• **Cold-climate starting up**—Tanks put into operation in northern climates should be seeded with digested sludge because digestion proceeds slowly at lower temperatures. Seeding may also prevent offensive odors until alkaline digestion sets up.

• **Amount of sludge seed**—About six gallons of digested sludge per capita is probably needed as a starter. Additional investigation is needed for confirmation.

• **Adding yeast**—Digestion of sewage alone is not stimulated for at least 25 days after yeast has been added.

• **Yeast and gas production**—Gas production appeared to be stimulated by addition of yeast to sewage-ripe sludge mixtures. This is believed to be the result of gas production in the yeast suspension (yeast plus starch)—not of stimulation of sewage-sludge digestion.

How Softener Salts Affect Digestion . . .

To determine effect of water-softener regenerative wastes on tank functioning, studies were initiated on a laboratory scale. A concentrated stock solution containing proper concentration and ratio of sodium, calcium and magnesium chloride was prepared. Various quantities of stock solution were added to a series of bottles containing sewage and sludge. One bottle of each series served as a control. Production of gas was the measure of digestion.

Findings based on several groups of experiments are:

• **Effect of salt**—A 1.2% salt concentration severly inhibited digestion of sludge-sewage mixtures but a 0.6% concentration affected digestion much less, during 180-hr contact. Concentrations of 0.2 an 0.4% showed no detrimental effect on gasification (Fig. 5).

• **Toxicity**—Effect of toxic concentrations is reduced by flushing (mixing and dilution). Recovery from initial lags develops with 150 to 200 hours after 2 to 48-hr contact with 1.2%-salt concentration when followed by dilution.

• **Partial dilution**—A 2.4% salt concentration in two tanks (2 and 8) did not dilute in lower part of tanks—when dosed at 250 gpd—although mixing and dilution took place in tanks' upper portion. Only 50% of the theoretically possible amount of salt discharged from the tanks in a week.

• **Salt reduction in tanks**—Tests on two full-size tanks indicate that mixing in tanks—through intermittent discharge of sewage—is inadequate to reduce salt concentrations in lower portions of units. Salts apparently accumulates in lower portions due to repetitive discharges from softeners until toxic levels are reached. Longer-period testing is needed for confirming present findings.

• **Low-salt concentrations**—In subtoxic concentrations, salts appear to stimulate digestion.

Disposal Systems Rarely Freeze Up . . .

Careful analysis of published reports, health department recommendations in eleven northern states and case histories indicates that household disposal systems—which have been installed with care and in conformity with state recommendations—rarely freeze up. It should be noted in this connection that only one of the cold

border states recommends cover depths approaching the frost line and one other calls for straw cover where frost penetration is extreme. Other conclusions are:

• **Failures from freezing**—Operation difficulties from freezing are generally due to lack of compliance with design recommendations and of cover for construction in freezing weather. Unprotected sewers under driveways are particularly weak points.

• **Canadian practice**—Investigation of septic tanks in northern Canada by the Ontario Agricultural College reveal that no troubles accrue when: Tanks are 12 in. below ground surface; and disposal tiles are 18- to 24-in. deep. These recommendations hold only when the system is kept in continual use and no part of it is under hard-packed roadway.

• **Country school systems**—Survey of country-school disposal plants reveal that freeze-ups occur when no heat is added to water and there are long periods of daily and weekly idleness. No household freezing was reported during the same study period.

• **Plumber's poll**—Small incidence of freezing in shallow systems was indicated by a poll of northern plumbers.

• **Shallow systems**—From data assembled, it appears that shallow household systems will rarely freeze if they are carefully constructed and keep in continuous operation, tile lines are gravel-packed, and pipes under driveways or surfaces usually cleared of snow are insulated.

• **Limitations of study**—The first investigation extended from Feb., 1947 to June, 1948 (ENR June 10, 1948, p 102). These and studies currently underway—the first of their kind and scope—are sponsored jointly by the Housing and Home Finance Agency and the U. S. Public Health Service, and are conducted by the service's Environmental Health Center at Cincinnati.

Further investigations may modify first-step findings, principally because effect of soil-absorbing characteristics for septic-tank effluents has not been explored. The USPHS suggests that, until such factors are evaluated, judgment of tank performance—on suspended-solids reductions alone—may be of limited value.

• **Research personnel**—The project is supervised by S. R. Weibel, sanitary engineer. Research was originally directed by C. P. Straub, sanitary engineer, now on assignment at Oak Ridge National Laboratory. Engineering investigations were carried on by a staff of eight sanitary and public-health experts; scientific studies were made by three chemists and one bacteriologist. V. G. MacKenzie is officer-in-charge at the Environmental Health Center.

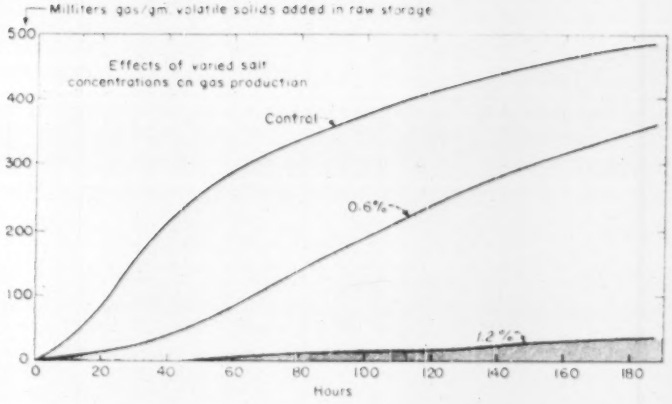


FIG. 5. HIGH CONCENTRATIONS of water-softening salts seriously inhibit sludge digestion. Low concentrations may stimulate digestion.

TABLE I—DESCRIPTION OF SEPTIC TANKS TESTED EXPERIMENTALLY

Tank Number	Total Liquid Capacity	Width ft.	Length ft.	Diameter ft.	Liquid Depth ft.	Remarks
1	2,060	5.0	11.00		5.0	Rectangular Joint Committee type.
2	513	2.92	5.84		4.42	Rounded ends.
3	553			2 at 3	5.25	2-compartment vertical cylinder.
4	673			4 at 2	7.25	4-compartment vertical cylinder.
		maximum				
5	525	3.33	6.00		4.25	Oval.
6	455			4.33	4.00	Single vertical cylinder.
7	539	3.0	6.00		4.00	Rectangular Joint Committee type.
8	492		5.00	4.33	3.75	Horizontal cylinder.
9*	539	3.0	6.00		4.00	Duplicate* of No. 7.
10	539	3.0	6.00		4.00	Rectangular Joint Committee type.
11	539	3.0	6.00		4.00	Weir outlet
12	123			2	5.25	Single vertical cylinder.
13	246			2 at 2	5.25	2-compartment vertical cylinder.
14	280		6+6+3	2	1.50	3-compartment horizontal cylinder.
15	539	3.0	6.0		4.00	Rectangular Joint Committee type.
16	539	3.0	3+3		4.00	2-compartment rectangular.
17	539	3.0	2+2+2		4.00	3-compartment rectangular.
18	405	3.0	6.0		3.00	Rectangular.

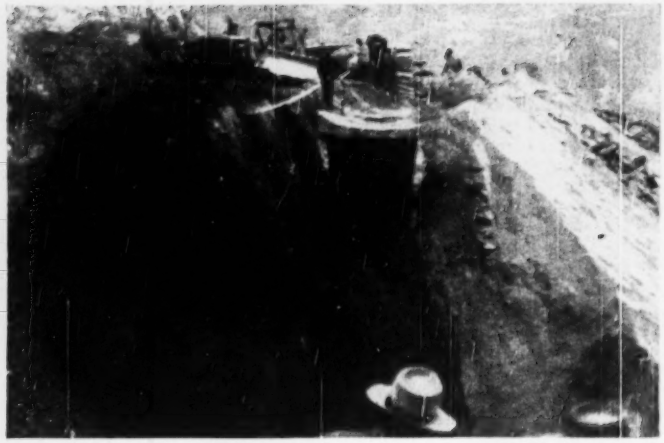
* Received ground garbage in addition to sewage.

TABLE II—RAW SEWAGE CHARACTERISTICS, JUNE 9, 1947—JUNE 28, 1948

(Based on averages of composited samples added to various tanks)

Series		1 6 9- 8 18 47	2 8 20 9 23 47	3 10 11 11 8 47	4 11 24 47- 2 15 48	5 2 22 3 28 48	6 3 30- 6 28 48
SS Ash	ppm	77	73	93	123	123	104
SS Volatile	ppm	271	241	261	427	353	336
Dissolved Solids	ppm	638	512	574	750	652	573
DS Ash	ppm	427	392	450	571	478	444
DS Volatile	ppm	212	120	222	179	174	129
pH		7.3	7.3	7.5	7.5	7.4	7.4
BOD		370	362	366	480		402

BREAK in Los Angeles Aqueduct permitted water to tear out a huge section of pipe and gouge great hole in embankment.



REPAIR involved the mixing of native material with cement to form what amounted to a weak mixed-in-place concrete. Bulldozers did the mixing and then pushed the mixture into place to support new conduit.

Soil-Cement Fill Speeds Aqueduct Repair

AN AQUEDUCT BREAK can be catastrophic—particularly when the line involved is the 495-cfs conduit serving one of the largest cities in the country—Los Angeles.

Thus, rapid repair (within 10 days) of a Los Angeles aqueduct break in January 1950 was of paramount importance. The work was complicated because water flowing out of the break washed 5,000 cu yd of material from a hillside supporting the line. For this reason the repair job had two phases: Rebuilding the hillside and replacing the damaged line.

Cause of the break in the 8½ x 8½-ft concrete conduit is not known. However, it can probably be attributed to the age of the pipe—originally constructed in 1913.

Within an hour after discovery of the break on Saturday, Jan. 7, flow from the Haiwee reservoir, 55 miles above the break, had been cut and dewatering of the conduit started at several intermediate points.

An estimated one-third of the 1,000 acre-ft of water that was in the line when the break occurred spilled down the steep mountainside, gouging a 50-ft deep pit and widening the original break from 40 to 152 ft. This damage was the maximum possible, since the aqueduct was running at capacity at the time.

The break cut off 70% of the water flow to reservoirs above Los Angeles. For every day the aqueduct was shut down, 1,000 acre-ft of water delivery was lost—equivalent to $20,000 in water sales.

• **Alternate plans**—At first, water department engineers considered installing a temporary steel pipe to bridge the gap. This was ruled out for three reasons: (1) Pipe of the diameter required is difficult to obtain—would pose great problems in hauling up the steep hillside; (2) It would be a temporary measure at best; (3) Any smaller conduit—a compromise—would limit the capacity of the entire 233-mile length of the aqueduct.

Then it was decided to blast the hill above the break and mix this native material with cement. As the natural formation is predominantly rocky, this amounted to a weak mixed-in-place concrete.

The resulting mix is porous enough to prevent hydrostatic pressure building up on the back side, and strong enough to minimize settlement. This scheme permitted quick reconstruction of the hillside supporting the aqueduct, and repair of the conduit could start immediately after completion of the embankment.

Complicating factors in all the work were snow flurries and temperatures as low as 20°F. In addition, the hillside at the break was so steep that to reach one side of it from the other required a 5-mile run down the valley and around by way of a state highway.

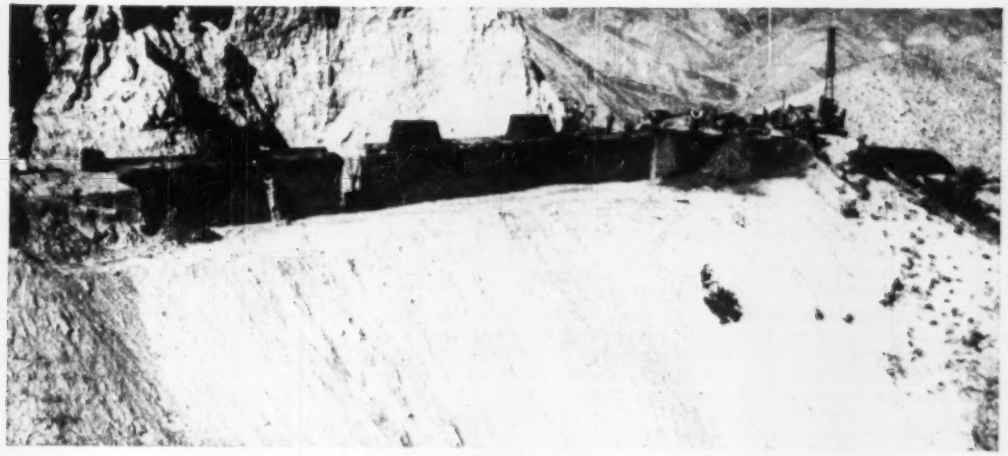
• **Mixing soil-cement**—Experience on a previous aqueduct break had taught the engineers that to mix dirt and concrete, bulldozers must work uphill, not down. Working downhill in steep terrain merely pushes the mixture ahead of the 'dozer blade. But, if a ramp is built and the 'dozer works uphill, satisfactory action occurs—thoroughly mixing native material and cement.

A two-sack mix was used—that is, two sacks of cement with every cubic yard of native material. The procedure was to mix 3 cu yd a minute, push this into the gap, and mix some more. Water was added from hoses during the mixing, wetting to a soggy consistency. Workmen broke open bags of cement just ahead of the 'dozer blade.

Water for mixing was obtained by throwing a sandbag bulkhead across the upper end of the broken aqueduct storing a 4-cfs flow that was introduced. Some 50,000 gal were retained by the bulkhead. Excess water was blown off at Pine Tree siphon a few hundred feet above the break. Three pumps were used in the work, one of which fed a 2-in. pipe line running across the break.

The 165 men involved worked on a two 10-hr shift basis and the fill was completed in less than four days.

• **Rebuilding the conduit**—By Wednesday morning, four days after the break was discovered, a 12-in. floor



FINISHED FILL is porous enough to prevent hydrostatic pressure building up on back side, strong enough to minimize settlement. Repair of the pipe itself could start immediately after completion of the replacement embankment.

slab was poured on the soil-cement fill. Two percent calcium chloride was added to the cement to speed set. Seven-day strength was thus obtained in 24 hr. Pouring the walls started on the fifth day.

The old aqueduct at each end of the 152-ft break was about 20 ft off alignment to conform with the curve of the hill. Rather than construct two sharp turns at each end of the break, an easy S-curve was adopted.

The original conduit had 9-in. thick floors and walls—mostly unreinforced. Only the roof had reinforcing. All new work, however, was heavily reinforced. Thus, the bottom slab of the repaired section acted as a beam and was strong enough to support the conduit should slight settlement take place.

• **Joining old and new**—The junction of the old aqueduct wall and the repaired section presented a difficult problem. Two factors were of immediate concern: (1) How to construct a junction allowing for possible slight settlement of the fill, and (2) How to join the sections, since the new concrete was heavily reinforced while the old section had no reinforcing in much of the slab—and what reinforcing was found was of high-carbon steel and could not be bent. Lack of reinforcing in the old aqueduct made doweling impossible.

Solution was an overlap system on the outside walls. The inside of the aqueduct was joined smoothly; outside, a 9-in. thick overlap wall was placed. This wall ran about 2 ft beyond the break and was coated on the outside with an asphalt base material to permit a slip surface—allowing 2-in. of slippage if necessary. A day later another overlapping wall was installed that ran 20 ft back from the break.

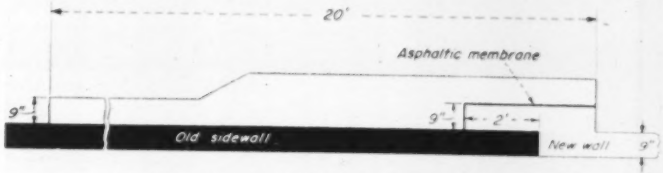
By Sunday, Jan. 15, the roof of the conduit was poured and 24 hr later the forms were removed. Then the outlet gates at Hawee reservoir were opened, water reaching the repaired section ten days after discovery of the break.

To date there have been no leaks and measurements taken have revealed no settlement of the soil-cement mixture.

To complete the job, a 3-ft dirt blanket was bulldozed over the repaired conduit and a 20-ft thick blanket was laid down the slope. This blanket was built up from the bottom of the steep hillside in 1-ft layers packed down by the action of the tractors. To further compact this protective blanket, water was added between each layer.

Fill was obtained from the hill above the new section. This, in effect, cut down the natural slope of the overhanging hill and will help prevent washouts and landslides on the newly-filled material.

All construction was under the direct supervision of H. F. Cahill, superintendent of the Department of Water & Power's southern division, under general charge of Samuel B. S. Nelson, head of the aqueduct division, and J. G. Cowan, southern dist. engineer.



PLAN OF JOINT BETWEEN OLD AQUEDUCT AND REPAIR SECTION

SPECIAL COLLAR of reinforced concrete joined the old aqueduct with the repaired section. Asphaltic membrane will prevent leakage at the joint, in the event of settlement of the new section.

Proportioning Trusses for Economy By a New Least-Weight Formula

M. W. Jackson,

Assistant Professor, Georgia Institute of Technology Atlanta, Georgia

BECAUSE CONTRACT PRICES are usually based on weights, the economic proportions of a steel truss bridge must depend considerably on the least-weight of metal that can be used for a given depth. Yet most formulas relate economic depth to span length only. With these facts in mind, and finding appropriate data unavailable, the writer prepared preliminary designs for approximately 200 trusses in an effort to develop a more useful truss-depth formula.

The formula that resulted for least-weight depth, d, is:

$$d = 0.21\, p\, n\, W^{1/2},$$

in which p is the panel length, n is the number of panels, and W is the load in kips per foot of bridge which under the conditions set will produce the maximum chord stress. In comparison, advice in current books to the effect that economic truss-depths should vary from one-fifth to one-seventh of the span is not very helpful. Existing formulas of the general type,

$$d = 1.15\, L^{3/4}$$

(in which L is the span length and 1.15 is a constant which may be varied for the type of bridge and the loading), were found to agree with the design results only partially.

• **Investigation limited**—Because of the magnitude of the work involved, it was necessary to limit the investigation to riveted parallel-chord railroad bridges of simple span. All designs were based on double-track, open timber deck, Warren trusses. The 1947 American Railway Engineering Association specifications were used throughout. In the designs, an attempt was made to follow good design procedure rather than strive for the absolute least possible weight in each individual member of a truss. Different working stresses would change the weight of a bridge, but additional study would be required to estimate this effect on weight-depth curves.

The designs were complete to the extent of selection of sections for all members. The stresses were computed considering the load on the truss applied entirely at the panel points on the lower chord. A fixed percentage was added for the weights of details, and for the weights of bracing, respectively 37½ percent and 10 percent of the weight of the members of the two trusses, since preliminary calculations indicated that these were reasonable figures. The weights of the members were based on the gross areas of the cross-sections and the center-to-center lengths.

Four variables were considered in the designs, namely, panel length, number of panels, depth of truss and loading. The first two variables, of course, included variation in span lengths. Designs were made for trusses for four or five depths that varied by intervals of 5 ft for loadings of E-45, E-60, and E-75, for combinations of panel lengths of 24, 30, and 36 ft, and for 6, 8, 10, and 12 panels, but with no span exceeding 500 ft.

An analysis of the distribution of the truss weight within the truss was made for fourteen of the trusses, by computing the percent of the total weight of the truss for each individual member. This was broken down further to show the percent of total weight contributed by tensile members and by compression members. The analysis of these factors showed that small variations in the dead load, live load or in the impact formula, which could be due to the application of other specifications or to the judgment of different designers, would have had no significant effect on the weight-depth curves for any group of trusses.

It is impossible to secure areas of members that will exactly duplicate the calculated requirements for relatively small variations in total stress. Consequently, small variations in depth for actual designs gave an irregular scatter of points on a weight-depth curve.

• **Range determined**—Since it was not practicable to obtain an exact point of minimum weight for a given depth, it was necessary to have some means of obtaining general trends. For this purpose the range of depth was established in each case for a group of trusses within which the plotted data would differ from the calculated minimum weight no more than one percent. This factor of one percent seemed reasonable, since designs prepared by different persons for identical conditions will not ordinarily agree in total weight within more than one or two percent. In most cases the range for a one percent variation in the least-weight depth covered about 10 feet. This range in itself indicates that a determination of the exact least-weight depth is not necessarily of great importance. It is rather a useful guide for the judgment of the engineer, and as a guide it should show the influence of the variables.

The material in this article is condensed from a thesis which was presented in partial fulfillment of the requirements of the degree of Doctor of Philosphy in Structural Engineering in the Graduate College of the University of Illinois. The work was carried out under the guidance of Thomas C. Shedd, Professor of Structural Engineering. Acknowledgment is due to E. E. Howard of Howard, Needles, Tammen, and Bergendoff, and Shortridge Hardesty of Hardesty & Hanover, who contributed plans of existing structures which were a useful guide in the writer's designs. Thanks are also due Kuang H. Chu, a graduate student of the University of Illinois, who checked many of the design computations and data.

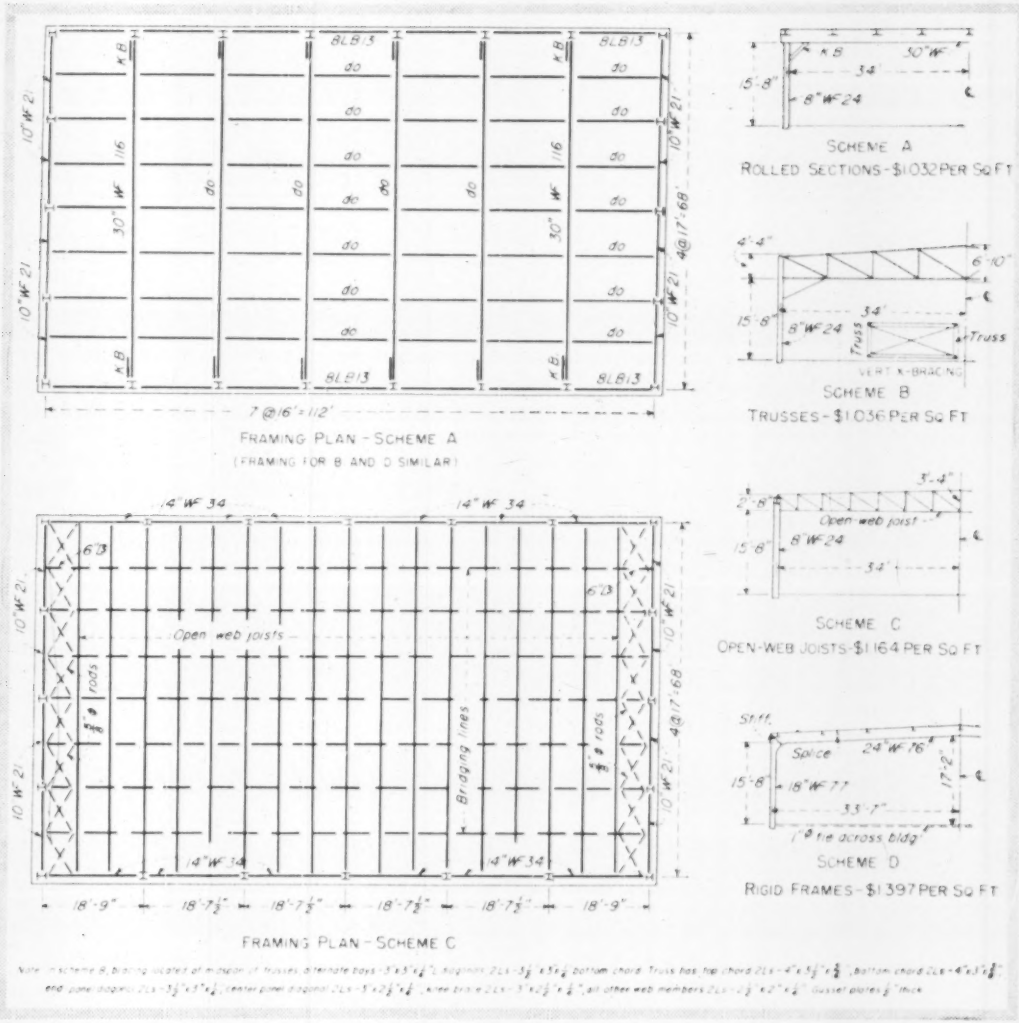
Sanitary Landfill Success In Subzero Temperatures

The Division of Sanitation of the U. S. Public Health Service has announced the success—through February—of the first winter's operation of an experimental sanitary landfill at Mandan, N. D.

The project is a cooperative venture of the USPHS, the North Dakota State Department of Health and the City of Mandan. The purpose is to determine feasibility of operating a sanitary landfill in subzero weather.

Mandan, with a population of 6,685, was selected as the site. The first winter's operation was accomplished by building trenches in advance, in the fall, and stockpiling dirt for cover material. During the winter, all refuse from the city has been satisfactorily disposed of in the landfill. Research is being performed concerning various types of cover, frost penetration, possible excavation and other pertinent data. A complete report of findings is expected to be made available this summer.

Temperatures at the fill were: maximum daily average for December, 20.1 deg.; 0.2 deg. for January; and 20.0 deg. in February. Minimum daily averages were: 0.6; −20.6 and −4.3. The lows for the three months, in order, were −25, −44 and −25.


FRAMING PLAN - SCHEME A
(FRAMING FOR B AND D SIMILAR)
SCHEME A
ROLLED SECTIONS - $1.032 PER SQ FT
SCHEME B
TRUSSES - $1.036 PER SQ FT
SCHEME C
OPEN-WEB JOISTS - $1.164 PER SQ FT
SCHEME D
RIGID FRAMES - $1.397 PER SQ FT
FRAMING PLAN - SCHEME C

Comparison of four types of roof framing showed that rolled beams offered . . .

Lowest Cost Framing for Small Building

Harold S. Woodward
Associate, Seelye, Stevenson & Value
New York, N. Y.

GIVEN THE PROBLEM of designing a small, one-story garage and service building, engineers designed four different structural framing systems. They then obtained cost estimates from steel fabricators and thus were able to determine which would cost least to build.

The engineers believed that wood bowstring trusses and rafters would be much cheaper than any steel design. The owner, however, objected, contending that maintenance would be higher and that appearance of the interior would not be satisfactory.

Bowing to this objection, the engineers laid out four framing schemes, which were to be sheathed with 2-in. tongue-and-groove plank: A, Rolled sections; B, Trusses; C, Open-web joists; and D, Rigid frames (see diagram). In all cases, the building was assumed to be 68x112 ft.

The column spacing for C differs from that specified for the other schemes. With the 16-ft bay of A, B and D, the engineers could not place

a joist on the center line of columns and still maintain an economical spacing of joists. They, therefore, increased the column spacing to 18 ft 7½ in.

Three fabricators offered estimates, which when averaged showed that schemes A and B were low and differed by only 0.4 cents (see diagram). Hence, the engineers considered factors other than cost in deciding between these two framing systems. They noted, for example, that B called for 17 percent greater cubage than A, which would not only increase the initial building cost but also its maintenance. They also believed A offered better appearance. They selected A—the rolled-beam design.

It may be surprising to some designers that the rigid-frame system was about 35% more expensive than A. This occurs because higher fabrication costs more than offset any savings due to reduction in steel tonnage.

On a price basis, rigid-frame design cannot compete with standard framing for small buildings. It may be more successful, however, on big jobs with such a large number of duplicated frames that shop costs are radically reduced. Another consideration is that many shops are not equipped for efficient making of rigid frames.

Owners, in some cases, may be willing to pay the additional cost of rigid-frame construction to get a structure that is more pleasing architecturally. However, this would occur only when the building is to some extent monumental. Under present conditions, owners certainly cannot be expected to approve the added cost for such a mundane structure as a garage or service building.

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phrases of Construction Contracts (McGraw-Hill)

Formation of Contract

"Ordinarily, though the parties contemplate the ultimate execution of a more formal writing, the acceptance of a bid or offer results in a binding contract when none of the essential terms remain unsettled or require future determination."[1]

It should be noted in this connection that in other cases the courts have held that the parties to an agreement may make its reduction to a formal writing, and the execution of the same by the parties, a condition precedent to its effectiveness, notwithstanding that all the terms have been agreed upon.

In the case from which the above quotation is taken a bid was submitted and accepted to install boilers within a specified time and the contractor was directed to proceed with the work. The proposed contract at the time the bid was submitted and accepted provided that the bidder would be relieved from liability for damages for failure to install the boilers within the specified time. However, the formal contract, as executed, contained a rider imposing damages for delayed performance, and when there was delay, action was brought to recover damages for delayed performance. The court held that the rider was ineffective to impose such right to damages as a valid contract had already been entered into and there was no consideration to support the right to damages contained in the rider.

(1) Power Service Corporation V. Joslin, 175 F. 2nd 858, (U. S. Court of Appeals, Ninth District, June 21, 1949) and numerous cases there cited.

Prevention of performance

Each party to a contract impliedly agrees not to prevent the other party from performing his part. Prevention of performance is equivalent to a repudiation of the contract.

Each party to a contract has a duty to do everything that the contract presupposes that he will do to accomplish its purpose. A party who prevents the fulfillment of a condition commits a breach of the contract and cannot rely on such condition to prevent a recovery by the other party.[2]

Where the contract is for doing certain work on a building, it contains an implied covenant that the contractor will be given possession of the building at the proper time to enable him to perform his contract. Where the owner serves a notice on the contractor to keep off the premises where the work is to be done, he thereby breaches the implied covenant that the contractor will be given possession of the premises so that he will be able to perform the contract.[3]

Generally, where one agrees to do for a fixed sum a thing possible to be performed he will not be excused from performing, nor will he be entitled to additional compensation because unforeseen conditions are encountered. The contractor is also under an obligation to complete the building or structure if it is destroyed before completion.

The general rule is that, if destruction of a work is caused by defective, inadequate, or insufficient plans and specifications furnished by the owner, the contractor is nevertheless liable to complete the work without extra compensation. An exception to this rule is recognized where the owner expressly or impliedly warrants the sufficiency of the plans furnished by him.[4]

"A party who engages to do work has a right from any act or hindrance of the other party, and if such other party interferes, hinders, and prevents the doing of the work to such an extent as to render its performance difficult and largely diminish the profits, the first may treat the contract as broken and is not bound to proceed under the added burden and expense. It may stop and sue for the damages which it has sustained by reason of the nonperformance which the other party caused."[5]

A party who, being prevented by the act of the adverse party from completing a contract in the time stipulated, goes on with the work until compelled to abandon it, may recover the value of the work done on the basis of the fair and reasonable value of the services rendered.

A party not in default, may recognize a contract and give the other party an opportunity to comply with its terms, and if in such case the other party promises to comply, a continuance of the work under such circumstances is not a waiver of the contractor's rights nor does it prevent his asserting the right to recover for the work on the basis of fair and reasonable value.[6]

(2) Clifton v. Embassy Realty Associates, 202 P. 2nd 427 (Court of Appeals of Cal., April 28, 1949.)

(3) Hoenberger v. McKelvey, 205 P. 2nd 709 (District Court of Cal., June 27, 1949.)

(4) Brasher v. City of Alexandria, 41 So. 2nd 512 (Supreme Court of Louisiana, Feb. 14, 1949.)

(4a) Anvil Mining Co. v. Humble, 153 U. S. 540, 38 L. Ed. 814 (U. S. Supreme Court.)

(5) Texas Association V. Joe Bland Const. Co., 222 S. W. 2nd 175 (Court of civil Appeals of Texas, July 6, 1949.)

Delay in Obtaining The Building Permit

Where the contractor assumed the obligation to obtain a building permit and negligently delayed in applying for the same, so that the permit was not issued prior to governmental prohibition against further issuance of permits for commercial buildings, the contractor was held liable for damages.[7]

(6) Square v. Kaplan et al., 202 P. 2d 561 (District Court of Appeal, Second District, Division 1, California.)

Care in Distributing Hot Mix Speeds Highway Widening

Horace S. Kerr
Superintendent, H. B. Zachry Co., San Antonio, Texas

Hot mix is put down by job-built windrow evener . .

Blade grader follows, pushing asphaltic concrete into prepared space. Then steel drag shapes the mix.

IN WIDENING old pavements with asphaltic materials, a major construction problem faced by the contractor is to distribute the right amount of base material in the cut made along the edge of the old slab. Equipment that normally is used for bituminous paving cannot be used for the narrow strip that generally is needed to give adequate width to an old pavement (although there now are on the market special spreaders and rollers for such work).

Lacking such special equipment, we devised equipment that worked satisfactorily in widening 18 miles on U. S. 80 in Hudspeth County, Texas, about 50 miles east of El Paso. Other contractors may find the scheme useful on jobs that do not warrant the purchase of special equipment.

The old 18-ft wide concrete pavement was not so badly cracked as to require replacement, but it needed resurfacing and widening to 24 ft. For about two-thirds of its length the widening was accomplished by adding 3 ft on each side. For the remainder, 6 ft was added at one side because of the nearness of an irrigation canal on the opposite side. There also were minor relocations to eliminate curves too sharp for modern traffic.

Except at a few locations where soil conditions were poor, the new base for the widening was made 7 in. thick, of hot mix asphalt. The surface or redecking course consisted of 175 lb per sq yd of dense graded hot mix, laid in two courses, and placed with a spreader.

As a first step in the widening, the shoulder was bladed back to a depth of 7 in. along the edges of the old concrete. Then we built the windrow box shown in photo at the top of the page and with it placed the required amount of base material in a windrow right on the surface of the old concrete near its outer edge. A blade grader followed, pushing the hot mix off the concrete pavement into the prepared space along the shoulder of the two-lane highway.

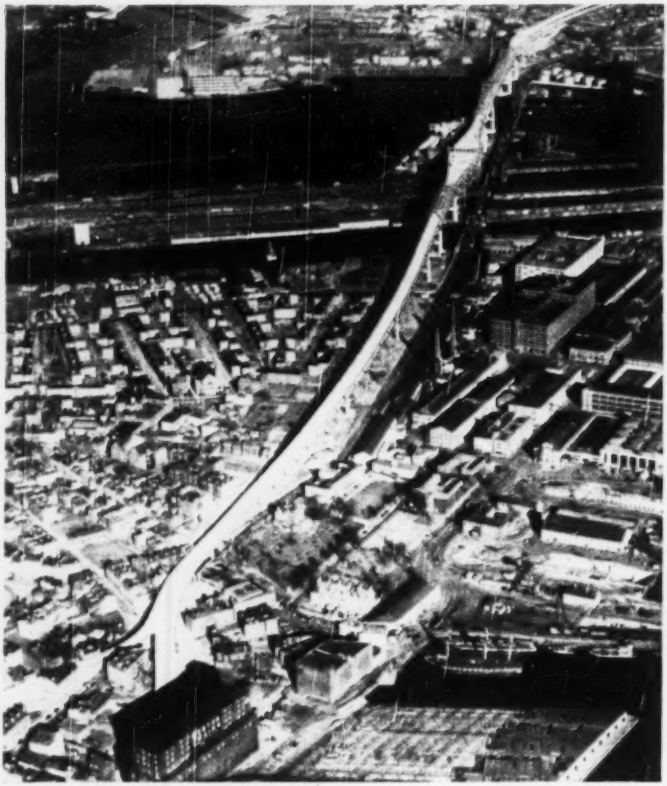
The grader was followed in turn by another piece of equipment we devised for the job, a steel drag built on the principal of the old Wisconsin road drag, that spread the mixture to a uniform thickness and a 34-ft. width. Earth then was bladed against the outer edge and a conventional 3-wheel roller was used to compact the base course.

Application of the surfacing followed normal procedures of highway surfacing operation which need not be described here.

The Hudspeth County project was built for the Texas Highway Department, for which P. S. Bailey was district engineer and L. E. Wood senior resident engineer.

Boston Unbound

It will be easier to travel in Boston when five transportation agencies' plans are fulfilled.



ALREADY COMPLETE is Mystic River Bridge, one of the projects that will improve transportation in Massachusetts' capital city.

"Last Friday at quitting time it took me two hours to drive from there to there."

A Massachusetts Department of Public Works official was pointing out the window of his office opposite Boston's North Station railroad yards. The distance he indicated was one block.

Then he pointed to his desk. On it was a rendering of an elevated-street project. "When this is built, there'll be no more jams in this part of Boston."

The elevated street—called the Central Artery—is just one of several projects that will ease the movement of that congested city's persons and goods in the definite future. Some projects are complete, some are under way, and more are authorized for early starts. They are in three categories: Rapid transit, air transport and vehicular traffic. Five public agencies are handling the congestion-relief projects, whose locations and progress are detailed on the next page.

In general, the projects are radial from the city's heart—like spokes from the hub.

• **Rapid transit**—The Massachusetts legislature has handed the Metropolitan Transit Authority great plans for rapid transit line extensions to suburbs eight directions from the hub. With one exception, however, immediate work involves revamping existing lines. (See project list).

The Washington Street tunnel extension to Forest Hills will remove elevated structures from that broad southwestward thoroughfare, freeing it for full vehicular use. A similar service will result from the Washington tunnel extension to Sullivan Square, the principal route benefited will be Main St. in Charlestown, a northwestward thoroughfare.

The East Boston extension will be an important link in the city's transport chain. It will place the airport right on the rapid-transit lines. (Another rapid-transit project, now authorized, involves four-tracking the Park St.-Scollay Square connection. This $11,500,000 job will speed terminal and exchange service in the city's heart.)

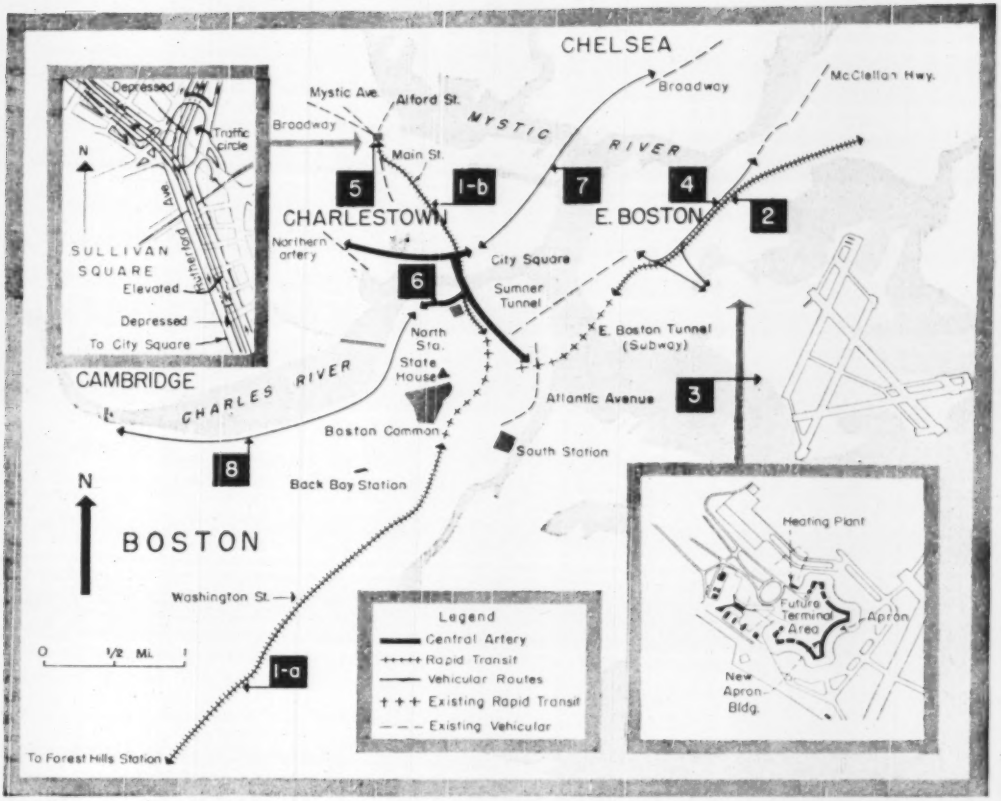
• **Air transport**—For some time, Boston's airport has been one of the best-located in the United States. It can be reached by a 15-minute taxi or subway-bus ride from the hub. Now it has one of the finest physical plants, newly built on hydraulic-filled land. The new apron building (illustrated) with its 22 plane positions, can serve a flight every 2½ minutes.

Northeast-southwest parallel-runway facilities (with benefits somewhat similar to those of double-tracking a railroad) will be complete this year, one runway being 7,000 ft. long and the other 10,000 ft. Furthermore, runways paralleling the field's other two strips are in the long-range plans, although landfill does not yet extend to these secondary parallel-runway areas.

• **Vehicular traffic**—Boston's biggest problem is handling this type of traffic. Even the rapid-transit projects noted above are intended primarily to increase the vehicle capacity of streets. And three agencies are doing all the construction they may to save motorists from embarrassing and frustrating delays.

A typical delay is the one experienced by people who get caught in Sumner Tunnel traffic on the way to the airport. (The trip isn't always a 15-minute one.) Although a second tube would be the best improvement, new alternate routes and better tunnel connections will help. One of these connections is the East Boston Expressway, which will carry out-bound traffic from the tunnel to the airport and to northeast suburbs.

Another connection is the elevated Central Artery, which will pass the tunnel mouth at the city end, providing ramps to the tunnel. The Central Artery is the first State Department of Public Works highway job inside Boston. It will take 50,000 vehicles a day off the streets. In addition to serving the older tunnel, it will connect at



Projects that will improve transportation in historic Boston

(Numbers refer to paragraphs below, in which descriptions and status are given.)

Rapid Transit

Metropolitan Transit Authority

1a. Washington St. tunnel line, present tunnel terminus to Forest Hills sta. line's terminal). PROJECT: Remove 3⅛ mi of elevated structure and replace by 2.4 mi underground, 1 mi at grade, .4 mi new elevated structure, much of the new location paralleling Washington St. STATUS: $31,000,000 cost authorized by legislature for financing (Boston Metropolitan District will purchase M. T. A. bonds and sell District bonds to public); surveys and planning under way.

1b. Washington St. tunnel line, present tunnel terminus at Haymarket Sq., to Sullivan Sq. PROJECT: Remove elevated structure and replace by 1.7 mi underground section (including tunnel under Charles River,) and 0.1 mi ramp to existing Sullivan Sq. sta. STATUS: $24,000,000 cost authorized for financing, as above.

2. East Boston tunnel line, from Maverick sta. in East Boston. PROJECT: Extend line 2.1 mi from Maverick, including 0.6 mi subway and ramp, 1.5 mi at grade. STATUS: under construction, to be completed in mid-1951.

Air Transport

State Airport Management Board

3. Logan International Airport. PROJECT: Terminal facilities, including apron building to serve 40 plane positions, plus aprons and terminal administration building; provision of two 7000-ft, two 8000-ft, and two 10,000-ft runways. STATUS: apron building complete for 22 plane positions; two 7000-ft runways complete; two more to be completed in 1950; present value, $50,000,000 with $5,900,000 additional work to be completed this year. (Financed by commonwealth of Massachusetts through revenue bonds.)

Vehicular Traffic

Massachusetts Department of Public Works

4. East Boston Expressway. PROJECT: construction of 1.3-mi four-lane divided highway, partly elevated, plus 3,000 ft of ramp. STATUS: under construction, this $10,000,000 project will be complete this year. Financed by general highway fund.

5. Sullivan Square revision. PROJECT: a double grade separation that will carry (a) Somerville and Medford traffic over a new traffic circle at the square, (b) Everett traffic under the circle. STATUS: Under construction, this $7,500,000 project will be complete in mid-1952. (Financed by federal aid, urban and general highway fund.)

6. Boston Central Artery. PROJECT: elevated street from city's old section, across Charles river and to Cambridge, 2 mi, with connections (in Boston) to Storrow Memorial Embankment and (in Charlestown) to Mystic River bridge. STATUS: $30,000,000 earmarked from state bond issue; construction under way March 1950; completion in 1952.

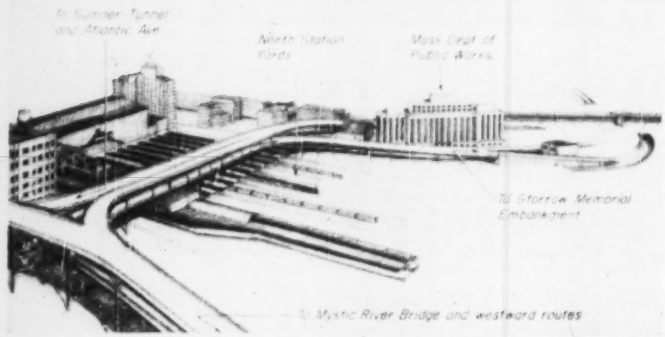
Mystic River Bridge Authority

7. Mystic River bridge. PROJECT: 2.2 mi, two-level bridge from City Square, Charlestown to Chelsea. STATUS: $27,000,000 job complete March 1950. (Financed by authority's revenue bonds.)

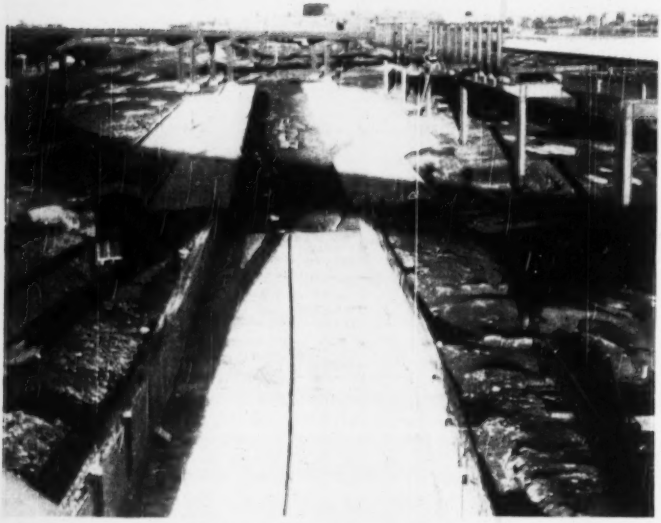
Metropolitan District Commission (Parks Division)

8. Storrow Memorial Embankment. PROJECT: Double-barreled 2½-mi limited-access drive from Central Artery to Boston University bridge, connecting with the Commission's regional park system. STATUS: first contracts on this $8,000,000 job have been let; completion expected in mid-1952.

APRON BUILDING at Logan International Airport is 50 ft wide throughout, 3,053 ft long, and has continuous roof-top promenade. Ultimate length is 5,227 ft.


To Sumner Tunnel and Atlantic Ave.
North Station Yards
Mass. Dept. of Public Works
To Storrow Memorial Embankment
To Mystic River Bridge and westward routes

CENTRAL ARTERY includes viaduct across North Station yards. Surface street in front of public works building has suffered many traffic jams.



AIRPORT ACCESS will be best in U. S. when city subway (ramp and airport station platform, center) and East Boston Expressway (elevated ramp structure) are complete.

least two new routes: Storrow Embankment and Mystic River Bridge.

The embankment will be a brand-new drive along the Charles on the Boston side. Until now there has been a narrow park strip here, but no public road. Landfill and construction soon will broaden the park, create a drive.

High-level, newly-opened Mystic River Bridge dominates the skyline north of Boston's center. It takes Chelsea-bound traffic off Charlestown waterfront streets, and it replaces an old swing bridge that has delayed millions of vehicles in years past. (In addition, Summer Tunnel congestion has eased since the bridge was opened.) The bridge's lower-end connection is to be the Central Artery, sofar an arterial connection has not been scheduled for the upper end.

One more vehicular bottleneck will be licked when the daily capacity of Sullivan Square, Charlestown, is increased to 50,000 vehicles per day. This work has an important relation to the Haymarket-Sullivan Square rapid-transit relocation. The latter project will get the elevated structure off Main St., one of two principal Boston-Sullivan Square routes.

• **Resident relocation a problem**—An ever-present problem in city traffic projects is the resettlement of families living on condemned property. The Sullivan Square job was delayed at the start by this problem and the East Boston Expressway is being delayed in completion for the same reason.

In this connection, the Mystic River Bridge experience is significant, both for the effect the housing problem had on the bridge's design and for the manner by which the bridge authority handled the problem. To keep condemnation to a minimum, the bridge was designed double-deck—outbound three lanes below and inbound three lanes above. As a result, needed right-of-way width was minimized and fewer families had to be displaced.

Resettlement of 650 families took place without so much as a lost night's sleep. Residents of 250 demolished houses moved to a Chelsea public housing project built for the purpose. Residents of 54 houses (152 families) moved with their houses to new lots. With the aid of a special rubber-tired trailer frame, each house was moved from old to new foundations in a single day. In the morning the trailer would be in place, its frames taking house loads through needle beams. Utility connections would be severed and the house (diesel-powered) would roll through Chelsea streets to its new lot. There the house would be backed in over new foundations, settled to place and hooked up to new utilities.

Infra-Red Lamps Replace Gas Heaters For Protecting Steel-Formed Concrete

INFRA-RED RAYS are saving a good many winter-concrete worries this season on one eastern job.

The job is an earthfill-dam cutoff wall. Concrete is placed in lifts, formed by self-raising steel panels. Each outside panel has a built-on working platform slightly below the panel's lower edge. The working platform and the form's exterior are closed in with canvas in cold weather.

Fresh concrete is kept from freezing by banks of five 250-watt infra-red lights. These are the ordinary bulbs for therapeutic heat-lamps. They can be bought in drug, hardware or appliance stores.

Job-made wood troughs, fitted with light sockets, contain the lamp banks. The troughs are deep enough to protect the lamps, and about 20 ft long—a few feet shorter than the form and its working platform. (The panel is about 7 ft high.)

A trough containing infra-red lamps is set horizontally at the outer edge of the working platform. The trough's open side is faced inward and upward, so that the infra-red rays cover the whole form surface.

When concrete is placed in the forms, the infra-red lamps are turned on, and left on until the concrete is no longer susceptible to freezing.

• **How the idea grew**—This infra-red heating for winter protection was an expedient that the contractor's project manager and project engineer cooked up toward the end of the 1948-49 winter. The cutoff wall had grown well above the ground—up where it caught the full effect of icy blasts. In competition with the strengthening cold winds gasoline-operated space heaters were pushing barely enough hot air through canvased ducts to the enshrouded forms.

Seeking to apply heat with a greater margin of safety, the project men suddenly thought of infra-red lamps. They got one—aimed it at steel filing cabinets and steel window frames in their job office, noted that the steel got too hot to touch. Then they rigged up the troughs and put them on the high-wall forms.

The results were entirely satisfactory. Concrete did not freeze—even when the temperature dropped to 15 deg below zero—and no evidences of excessive heating appeared. Moreover, the owners liked the results and, most important, no man had to expose himself to injury while crawling from form to higher form to service gas heaters.

• **No scientific data**—Although inspection confirms the effectiveness of infra-red heating, no attempt has been made to place the method on a scientific basis. The number and position of lamps has not been varied, nor have temperatures created within the concrete been determined.

By way of caution, the contractor states that the method is strictly for steel forms. Wood forms would not transmit the radiant heat, and they might char under prolonged exposure.

Pumpage Records Show War Fortunes

THERE is a peculiar parallel between history and the record of water pumpage—and a lesson for waterworks men everywhere—in records made available that cover the operation of the Warsaw, Poland, waterworks plant during the entire war period.

According to Conrad P. Straub, sanitary engineer, Public Health Service, who recently studied the surprisingly complete data showing fluctuations in pumping rates, the figures show:

1. The fluctuations in pumpage follow almost exactly the course of events in World War II.

2. Despite the fighting and counter-fighting within and around the city, water was available from the distribution system throughout the war period.

"I noted, on one of my visits to the Warsaw waterworks, that records had been kept which indicated pumping rates from January, 1930 to October, 1946," Mr. Straub said recently. "Study of the data showed that fluctuations in the pumping rates had occurred which correspond to specific campaigns in the Warsaw area during World War II."

Since these data may be of interest to sanitary engineers, Mr. Straub, now on loan to the Health Physics Division, Oak Ridge National Laboratory at Oak Ridge, Tenn.—brought them back to the United States for study.

"To determine average peacetime pumping rates," he said, "monthly pumping volumes were averaged over the period January 1930 to December 1938, indicating that the average peacetime pumping rate was 26.02 mgd, and a value of 100% was assigned to this volume of water.

"It is interesting to note that the highest flow recorded occurred in July 1939, followed by a slight drop in August and an appreciable drop in September of that year. This drop coincided with the German invasion of Poland on September 1, 1939. As a historical note, it may be recalled that the German High Command declared Poland completely conquered on September 23, 1939, but organized resistance continued at Warsaw and other cities until September 27, when the city surrendered unconditionally.

"The lowest pumping period followed this campaign in October, 1939, when an average of only 10.2 mgd was pumped. During the period that Warsaw was under German control, the monthly pumping rates increased and a maximum was reached in August 1944 when the monthly rate was 34.7 mgd.

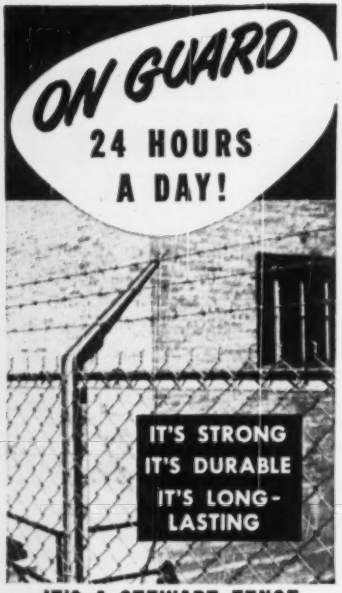
"Then, on August 1, 1944, the Warsaw insurrection began and it was reflected in a sudden drop in the pumping rates for the months immediately following."

Mr. Straub commented that from the data available, it can be inferred that the Warsaw waterworks were destroyed in September 1944. It is known that in October of that year the total volume of water pumped was at the rate of 0.016 mgd, but this supply did not come from the waterworks and for the next seven months all of the public water supply was obtained from artesian wells in the area.

However, by May of 1945 repairs had been made to the old steam engines located at the waterworks, the slow sand filters were placed in operation and water was pumped into the distribution system. In a period of 14 months thereafter, the pumping rate increased from 1 mgd to 14 mgd, when the well supplies were discontinued.

"It is of particular interest," Mr. Straub added, "that continuous operating results were kept over a period during which two major military campaigns occurred, and that Warsaw was fortunate to have the artesian wells available as temporary sources of supply that could be diverted into the municipal distribution system.

"This matter of auxiliary supplies from deep wells will take on added importance in the future, in consideration of atomic bomb attacks, particularly when municipalities use surface waters as their major source of supply."



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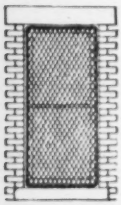

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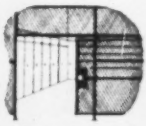

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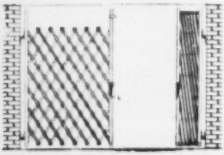

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READER COMMENT

Prestressing Curricula

Sir: The letter of Martin Mahler in ENR Dec. 29 concerning the need for the introduction of courses in prestressed concrete into the curricula of engineering schools in this country has just come to my attention and I would like heartily to endorse his views.

The theory of prestressed concrete can be handled by the average undergraduate and eventually room will have to be made in most curricula for proper presentation of this subject, since this method of construction has a large and expanding future. However, there is still a large gap between the analysis of a given girder section and the finding of the most economical design for a continuous structural framework if prestressing is resorted to, as compared to the same problem in ordinary reinforced concrete.

The problem of lectures can probably be solved by using men already on the faculties of the various schools in this country. The question of where to put this material is much *more* difficult of solution for most colleges, restricted as they are to the four year course. At Stevens, the solution has been to offer it as an elective course, open to men in their senior year. The subject is currently being given as an early afternoon class involving two hours of recitation and two hours of laboratory work per week. The present enrollment is 16 men and I am looking forward to greater interest as time goes on.

JOHN E. BRETT
Department of Civil Engineering
Stevens Institute of Technology
Hoboken, N. J.

Why Don't They —?

Sir: Surveying is my business. It consists mostly of restoring property lines as shown on maps dated the year eighteen fifty and then on.

It requires the patience of Job, the tricks of Sherlock Holmes and I have often prayed for the wisdom of Solomon.

The most inefficient tool that I have to use is the steel tape. One day's use along the salt water front spoils its "School Girl Complexion". It is awkward to use when setting off lot lines from the center line of the four tracked New Haven R. R. These rails carry heavy currents and under certain conditions if the tape touches two rails it will melt like an overloaded fuse. The tape is too long in the summer time and too short in the winter.

I believe that if we could use tapes made of continuous parallel spun glass fibers covered and rolled flat with a proper elastic plastic we would have a measuring medium with the following advantageous characteristics.

It would be noncorrosive from sea water and be easy to clean if it did get dirty.

It could be used anywhere there are structures carrying electric currents.

As glass has a low coefficient of thermal expansion it should be of nearly constant length regardless of the season of the year.

Please advise me if you know of a concern that would be willing to make a tape as suggested.

CLINTON C. HUBBELL
Engineer and Surveyor
Norwalk, Conn.

Contractor Against CVA

Harry W. Morrison, president, Morrison-Knudsen Co., Inc., Boise, Idaho, recently sent this memo to all of his employees through the medium of the company magazine, THE EM KAYAN:

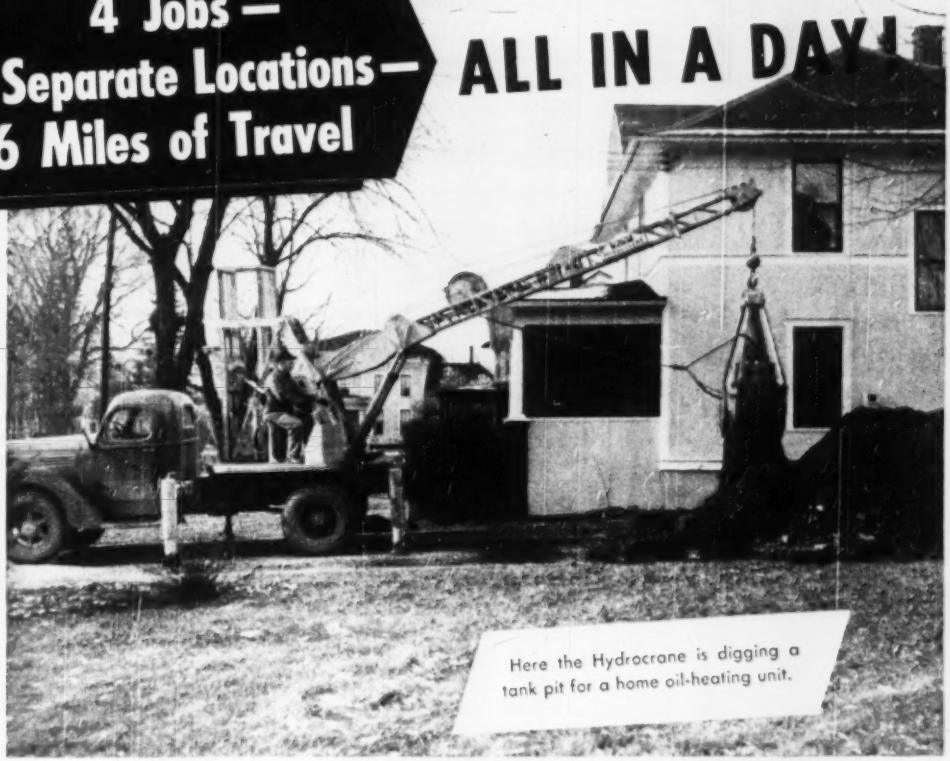
Morrison-Knudsen Company, Inc., has never been and is not now concerned with partisan politics as such. Our business is heavy construction, a highly competitive field of private enterprise in which we obtain and execute contracts both for private owners and for governmental agencies, staking our invested capital on our capabilities, asking no subsidy and no favor not based upon merit.

Our management has, however, a legitimate selfish interest in political proposals that would affect our business, the substantial investment it represents, and the livelihood of many thousands of people it employs. To borrow an ancient political term, we view with alarm an authoritarian proposal, urged by the socialistic element in national politics, to establish in our own flourishing Northwest a regional dictatorship to be known as the Columbia Valley Authority, or CVA. Following the pattern of the Tennessee Valley Authority in southern states, it would authorize three appointed bureaucrats to rule over the economic future of a seven-state area under the pretext of directing the development of vital water resources.

The development of those resources needs no super-authority to supplant the able and experienced planners of the Bureau of Reclamation and the

(Continued on page 51)

4 Jobs — 4 Separate Locations — 56 Miles of Travel ALL IN A DAY!



Here the Hydrocrane is digging a tank pit for a home oil-heating unit.

"With my truck-mounted H-3 Hydrocrane hitting 40 m.p.h. on the highway, I can handle more jobs than I ever thought possible," says E. R. Wolcott, excavating contractor of Big Flats, New York. "This rig is tops for portability and quick set up."

HERE'S WHAT THE HYDROCRANE DID IN A SINGLE DAY

"I drove 5 miles west of Big Flats and unloaded 4 tanks from railroad cars. Then, I drove 3 miles farther and set an upright boiler in place. The next job—the erection of a small quantity of Dox Blocks roof planking—was 18 miles away. Here, I had to work near high tension wires and the Hydrocrane's precision control and telescoping boom were big safety factors. My last job, which required 40 more miles of travel, consisted of digging out some old gasoline tanks. The return trip to Big Flats was about 20 miles — total travel 56 miles — all in a day. I figure we saved about 50 man hours and about $150 on these jobs by using the Hydrocrane."

On small jobs, Mr. Wolcott estimates savings in set-up and travel time of from 60 to 75% compared to other equipment. His jobs range from setting airplane hangar doors to close quarter excavation on a hospital addition.

Two Hydrocrane sizes — 1/4 yard 2-ton and 3/8 yard 3-ton. Available with clamshell bucket, magnet, snow bucket, catch basin bucket, 3-tine and multi-tine grapple. Get the full story. Send the coupon today.

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Citizens of the U.S.A. have paid road builders $35 Billion for highways. It is about the best investment the U.S.A. ever made.

Almost every citizen will agree to this when informed that it generates an annual income of more than $30 Billion in oil, rubber, motor cars, trucks, roadside services, etc.

In 1949 the U.S.A. bought $1.7 Billion worth of highways. That marked the highest rate of investment in the history of road building.

It brings the highway system up to a point adequate for handling the traffic of 1932. Since 1930, the number of vehicles on the road has increased 26½ million to ngarly 44 million.

Multiple Taxes Entitle Car Owners to Adequate Roads

The deficiency in highways is enormous. Estimates of this deficit range as follows: $11 Billion by U.S. Bureau of Public Roads; $20 Billion by Joint Economic Committee of Congress; $30 Billion by American Association of State Highway Officials and $60 Billion by the American Road Builders Association.

This confronts Road Builders with a challenge to become better Road Salesmen concentrating on the job of selling all citizens on insisting that legislators appropriate monies to wipe out the road deficit.

Point out to them that the visible and hidden taxes they pay on motor vehicles, gasoline, etc., entitles them to adequate all-weather roads. Also, considering what's at stake, they can be built relatively cheap by contract —the American way of giving the "undiverted" highway dollar highest possible purchasing power.

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FIELD AND OFFICE

How to Compute Panel Lengths Of Parallel-Diagonal Trusses

If you ever have occasion to design a trussed tower with parallel diagonals—like the one in the accompanying sketch—you will find the following formulas time saving:

$$\tan\alpha = \frac{H(1-\sqrt[N]{T/B})}{B-T}$$

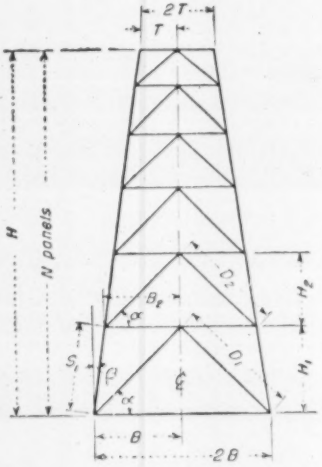
$$B_R = k^{R-1}B$$

$$H_R = k^{R-1}B\tan\alpha$$

$$S_R = k^{R-1}B\tan\alpha\sec\beta$$

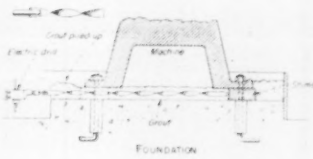
$$D_R = k^{R-1}B\sec\alpha$$

α is the angle the diagonals make with the horizontal, β the angle the truss chords make with the vertical, H the height of the tower, $2B$ the width at the base of the tower, $2T$ the width



at the top, S the length of a chord, D the length of a diagonal, N the number of panels and R, as a subscript or superscript, the number of panels from the base, being unity for the lowest and N for the topmost.

Generally, I and H are known quantities. Topography, esthetics and anchorage considerations affect the choice of B. N must be assumed. These values substituted in the first formula determine α. Then, D_1 and D_2, the length of the diagonals in the first two panels, can be computed. Since the diagonals may be subjected to compression, the length of these members may be uneconomical; a few values of N should be investigated for optimum results.—David Singer, *Bureau of Bridge Design, Department of Public Works, New York, N. Y.*



GROUTING FOR MACHINE BASES— By taking a piece of 1x¼" flat stock and giving it a left hand twist to resemble a worm, then welding a short piece of ¼" round stock to one end, for insertion in an electric-drill chuck, grouting of large machines, which have the grout pushed from one side, will be speeded. With this device the grout can be installed fairly stiff, thus eliminating some of the shrinkage worries. The grout when piled on the worm at the drill end will be spiralled to the other end. I have used this device with great success for installing large diesels.—Joseph Gamester, Portsmouth, N. H.

Estimating Allowable Loads on Structural Members

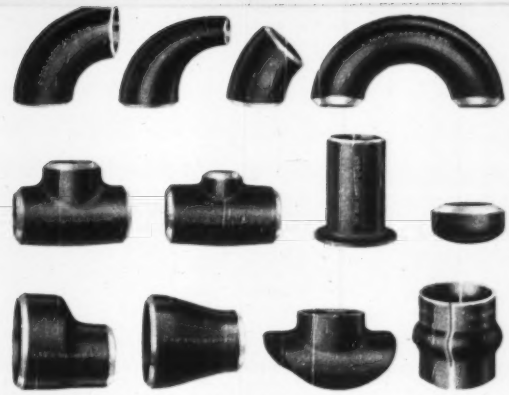
Some times an engineer is called upon to decide quickly whether he may use as a column a member, such as a T-beam, for which no allowable load table is given. Several simple rules permit a rapid approximation from the table of properties.

For instance, assuming $120\ l/r$ as the desired maximum ratio of slenderness, since r is given in inches and length is usually desired in feet, the allowable length in feet may be read directly by moving the decimal point over one place in the least-r column. Thus for ST 5 WF 24.5 (shown on p. 43 of the 1948 AISC Handbook), $r = 1.15$. Allowable length = 11.5 ft.

Since, at $120\ l/r$, the allowable fiber stress is 10,000 psi, the allowable load in kips is the area with the decimal place moved one place over. Thus, at 11.5 ft length, the T-beam listed above is good for a load of 72 kips, since the area is 7.2 sq in.

Sometimes, also, a designer is called upon to check the strength of a beam in the field without benefit of handbook. For wide-flange sections, an approximation of section modulus may be made by multiplying nominal depth by nominal weight per foot divided by 10. The error will in all cases be less than 10%, except for column sections.

Thus, for an 18 WF 50, $S = 18 \times 50/10 = 90$. Actual $S = 89.0$.—Thomas H. McKaig, *Consulting Engineer, Buffalo, N. Y.*



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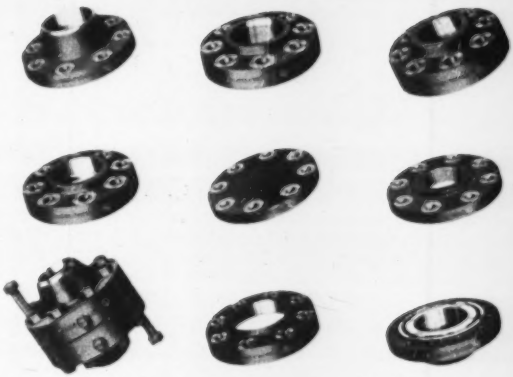
Standard through Double Extra Strong



FORGED STEEL FLANGES

½-inch through 30 inches

150 lbs. through 2500 lbs. pressure

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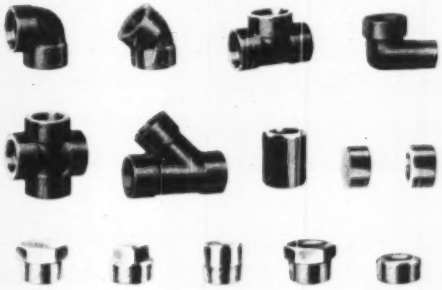
FORGED STEEL FITTINGS

Screwed and Socket Welding

⅛-inch through 4 inches

2000 lbs. through 6000 lbs. pressure

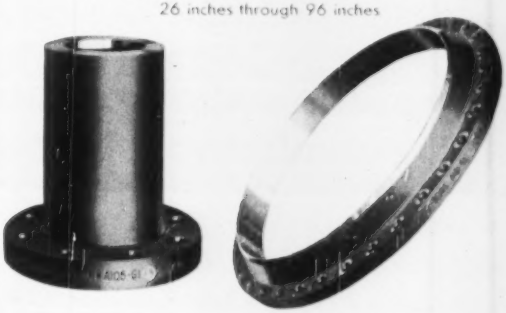


LONG WELDING NECKS

1-inch through 24 inches

LARGE O.D. FLANGES

26 inches through 96 inches



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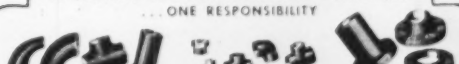

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It's a foundation for an overpass to carry coal cars from a strip mine. Naturally, it has to be strong and rigid—to withstand the multiple-ton weights of loaded coal cars. Construction was wanted quickly.

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Consider this, too. Rails were to be on a four-degree curve. But the Monotube piles were driven only 7 to 11 feet in undisturbed soil. Unsupported lengths varied from 12 to 15 feet . . . proof again of the stability and resistance to bending of these cast-in-place, tapered steel piles.

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For information, write The Union Metal Manufacturing Company, Canton 5, Ohio.

Overpass construction at Cadiz, Ohio. Contractor: The W. M. Brode Company, Newcomerstown, Ohio.

UNION METAL

Monotube Foundation Piles

(Continued from page 46)

Army Corps of Engineers. In this half-century of tremendous structural achievement they have planned and directed construction in the Northwest of multiple-purpose dams, power plants and irrigation facilities of the largest magnitude in history. Although limited by congressional appropriations and interrupted by wars, they have provided the water and power resources to serve the rocketing population growth of this prosperous region with such dams as Grand Coulee and Bonneville, Dorena, Deadwood, Anderson Ranch, and many others. Now they are erecting Hungry Horse, McNary, and Detroit, in rapid, coordinated development of the Columbia Basin waterways.

Private contractors, including M-K, have constructed these projects under contracts awarded to the lowest bidders. Under TVA, this practice was largely replaced by government forces doing the work without competition, with far less efficiency and at far higher costs than would private contractors through competitive bidding. In the government operation of the untaxed properties so built, TVA has destroyed tax-paying private power producers who had pioneered in electrical development, who were as essential factors in the regional and national economy as are the transportation companies, the telephone and telegraph companies, the factories, newspapers and stores.

We believe CVA would be a departure from sound principles of American economy into the path of reckless socialistic dictatorship—a threat to the welfare of our business and of business in general. Therefore we are against it.

Correction

SIR: ENGINEERING NEWS-RECORD of Mar. 16 contained a news item regarding the death of Allan B. Lincoln. This article stated that Mr. Lincoln was moving from New York on his way to take over direction of his company's contract on the Fort Randall Dam. This is not correct. R. B. Jewell is resident manager for this work at Fort Randall and there was no thought of replacing him with Mr. Lincoln. The purpose of his visit was entirely educational and to furnish Mr. Jewell any ideas or suggestions on the conduct of the work based on his experience. It is regretted that the details of this news story were not checked before the story was published.

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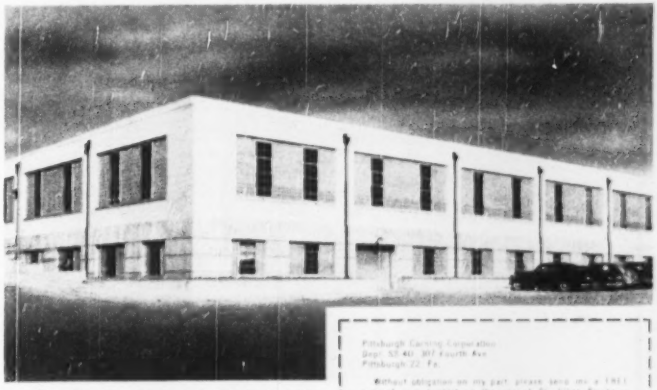

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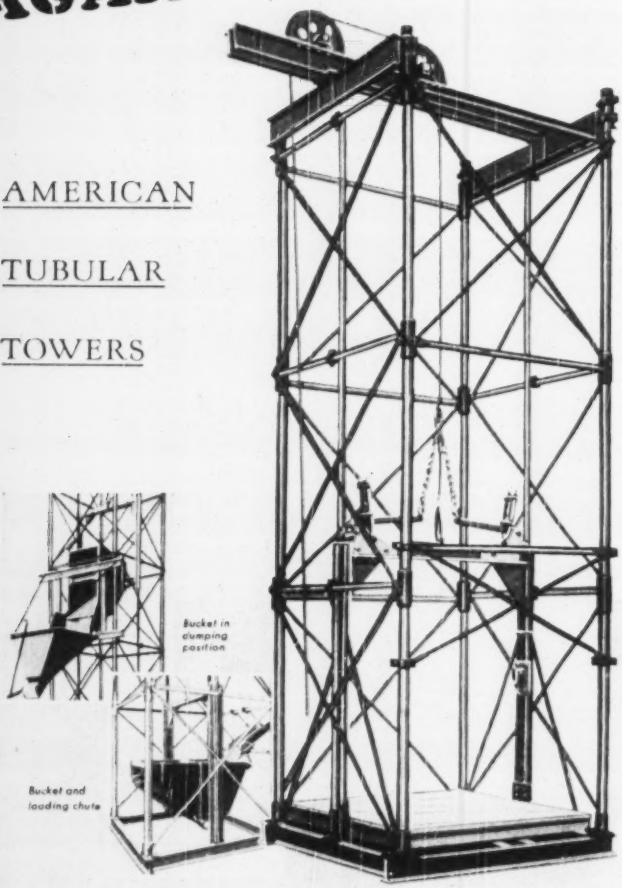

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Reports and Pamphlets

MANUAL OF HIGHWAY CONSTRUCTION PRACTICES AND METHODS—The American Association of State Highway Officials, 1220 National Press Building, Washington 4, D. C. $2.50.

STACK VENTING OF PLUMBING FIXTURES—Building Materials and Structures Report BMS115. National Bureau of Standards. Superintendent of Documents, Washington, D. C. 15c.

LARGE ORGANIC CATIONS AS SOIL STABILIZING AGENTS—By Donald T. Davidson. Bulletin 168, Iowa Engineering Experiment Station, Ames, Iowa.

CALIFORNIA CIVIL ENGINEER REGISTRATION EXAMINATIONS AND THEIR SOLUTION—Revised edition. 162 pp. August E. Waegemann, 2833 Webster St., San Francisco 23, Calif.

A GUIDE FOR CONTRACTING OF CONSTRUCTION AND RELATED ENGINEERING SERVICES—United States Atomic Energy Commission. Superintendent of Documents, Wash. 25, D. C. Price 10c.

EFFECTIVE TEACHING: A MANUAL FOR ENGINEERING INSTRUCTORS—By Fred C. Morris. McGraw-Hill Book Co., New York 18, London, Toronto. $0.60.

ROADS THE NEW WAY—By Harold Nockolds. British Road Federation, London. Price, 2 shillings.

PROCEEDINGS OF THE FIRST CALIFORNIA INSTITUTE ON STREET AND HIGHWAY PROBLEMS—Technical Bulletin No. 1. Institute of Transportation and Traffic Engineering, University of California, Berkeley, Calif., $1.00.

PRINCIPLES OF SANITATION APPLICABLE TO THE CONSTRUCTION OF NEW VESSELS—Federal Security Agency, Public Health Service, Division of Sanitation, Washington, D. C.

A STUDY OF PAINTS FOR ENCLOSED STRUCTURAL MEMBERS IN STEEL HOUSING CONSTRUCTION—Contributions to the Metallurgy of Steel—No. 31. American Iron and Steel Institute, New York 17, N. Y.

REVIEW OF CURRENT RESEARCH AND DIRECTORY OF MEMBER INSTITUTIONS—Engineering College Research Council of the American Society for Engineering Education, F. M. Dawson, University of Iowa, Iowa City.

ROAD RESEARCH—1948—Department of Scientific and Industrial Research, London, SW 1, England. 50c in U. S.

POSTWAR RICHMOND (Calif.): A Pictorial Summary of Postwar Accomplishments 1945-1949. Wayne E. Thompson, City Manager, Richmond, Calif.

PROCEEDINGS OF THE TENTH ANNUAL HIGHWAY ENGINEERING CONFERENCE—Bulletin No. 45. University of Utah, Salt Lake City, Utah.

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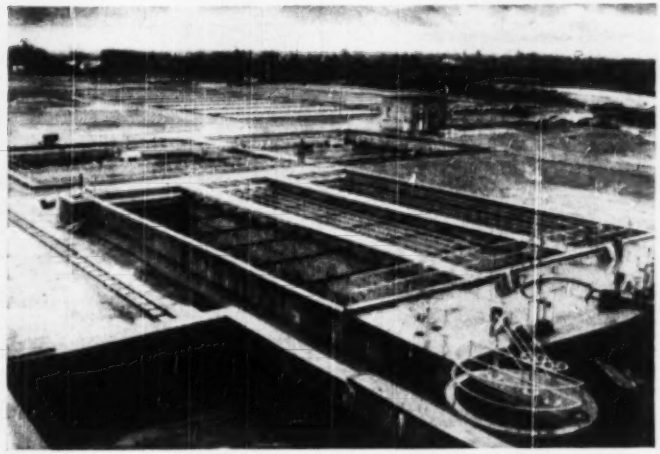


SEWAGE DISPOSAL—Just completed is this $1,500,000 sewage disposal plant in Boise, Idaho, constructed to reduce pollution of the Boise River. In the foreground are three primary settling basins of the 10 mgd activated sludge plant, and immediately behind are two secondary settling basins. Behind the secondary basins are sludge drying beds, and to the right and in the background are the chlorine contact basin and building. Alvord, Burdick & Howson, Chicago consulting engineers, designed the plant.

Neighboring communities may use Chicago water

Possibility of extending Chicago's water distribution was discussed at a recent meeting of the Chicago Regional Planning Association. Chicago and several North Shore suburbs and Indiana municipalities now sell water to adjoining towns and villages.

Robert Kingery, association general manager, told 350 mayors and municipal officials from as far south as Gary, Ind., and Milwaukee, Wis., on the north, that groundwater pressure was diminishing in the smaller communities. He urged them to consider means of getting water from the Chicago plant.

Chicago's water distribution facilities, including major intakes, tunnels and pumping stations are capable of serving a population of 7,000,000, according to Kingery, and could serve 70 or 80 more communities.

He said that present laws provide for establishing a water district and for the extension of the water service. Kingery recommended that the municipal officials undertake a study of a physical plant, the necessary legal steps and the financing of such an enterprise.

Oscar E. Hewitt, Chicago's commissioner of public works, asserted that there is no question that certain suburban areas will need Lake Michigan water.

"I hope they are ready to consider the question," he said. "We have a plan whereby we could supply water to 62 communities. We have been studying this problem and find that a larger network of mains, booster stations and reservoirs would cost $46,880,000."

Chicago water rates would not be sufficient to make the extensions, he said. That rate is the lowest of any large city in the country, according to Hewitt.

Los Angeles improvements $1,000,000 a week

The Los Angeles Board of Public Works has announced that expenditures for improvement projects during the 1950-51 fiscal year will be at the rate of $1,000,000 a week.

Work includes relief and interceptor sewers and sanitation systems, completion of Hyperion sewage treatment plant, and street and storm drain projects.

A substantial part of the $52,000,000 needed will be allocated by the state, a spokesman said, while 1947 and 1948 bond funds will provide for the sewage plant and sewer program.

Municipal Briefs

Atlanta traffic—The newly established City Traffic Commission of Atlanta, Ga., is considering two more proposals to help traffic in that city. They are channelization and pedestrian safety islands at Five Points, and installation of parking meters in the downtown section.

Integrated water supply—The Erie County, N. Y., Water Authority has applied to the N. Y. State Water Power & Control Commission for permission to acquire the Western N. Y. Water Co. The authority also plans to ask permission to acquire the Wanakah Water Co., and to integrate the two.

Toronto's highways—Toronto, Ont., will spend more than $5,000,000 this year on highway construction, with the Ontario provincial government paying a third of the cost. Largest single item will be the completion of the Clifton Road expressway for north-south traffic to and from the business district.

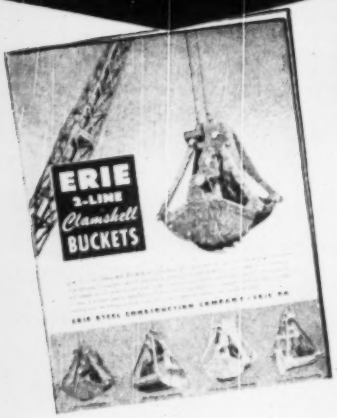
K. C. toll bridge problem—Kansas City, Mo., faces a major problem in providing another bridge over the Missouri River to handle the traffic resulting from the rapid growth of nearby areas. The problem is where to obtain the $12,000,000 necessary. It is estimated that tolls for 23 years would amortize bonds of half that amount.

City-County Cooperation—Voters of Dallas County, Tex., have approved a $22,500,000 road bond issue. The county and city of Dallas have worked out an integrated system of streets and roads and the city will have a $5,679,000 share in the bond issue to improve streets and roads within the city which connect with the road system of the county.

Albany arterial routes—A master plan for an 11.8-mile arterial route system for Albany and Rensselaer, N. Y., has been prepared by the N. Y. State Department of Public Works. While the work is estimated to cost $18,903,000 at current prices, the cities would have to pay only for one-half the cost of the rights of way, $1,132,000 and $137,000 respectively. All other costs would be borne by the state. This plan is only one of several which have been offered to other cities in the state, including New Rochelle and Lockport.

Baltimore housing—The city administration of Baltimore has a program for building 10,000 low-rent dwellings. It has already approved the construction of three projects—at Armistead Gardens, Westport, and Cherry Hill. The projects are tax-exempt, but proponents contend that, in the long run, the city will save more money in reduced police, fire and other municipal services than will be lost in property taxes on these projects.

HOW TO GET
Larger
BUCKET
PAYLOADS



This new Erie Catalog makes it possible to quickly choose, from the 4 classes of Erie 2-Line Buckets, the right bucket for *your* crane and material. Perhaps your crane can operate a larger bucket, for Erie alloy welded steel buckets result in greater payloads through scientific bucket weight reduction. Remember, that on bucket work, the cost of the crane and the operator all ride on the bucket. Send for this helpful catalog or outline your conditions and our engineers will make recommendations.

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EDUCATION and RESEARCH

JOB FORUM—As employment of civil engineering graduates tightens up in this fifth college year after World War II, students everywhere are eager to get expert career advice. For example, 123 out of 128 members of New York University's student ASCE chapter recently crowded a small hall to hear these men. Constituting a panel discussion of "What the profession is looking for in the graduating engineer," they represented four segments of civil engineering practice. Thorndyke Saville, N. Y. U. engineering dean, center, was moderator. Panel members, left to right, were: Clarence E. Boesch, U. S. Corps of Engineers, representing government service; Donald Bridgman, A. T. & T., industry; (Dean Saville); Elmer K. Timby, Howard Needles Tammen and Bergendoff, consulting engineers; Alfred T. Glasset, W. J. Barney Co., contractors. Behind the panel group two men recorded the proceedings, so that the advice can be re-examined.

Acoustics prediction is now possible

Prediction of acoustics of a structure before it is built is now possible through ultrasonics, according to scientists at Armour Research Foundation of Illinois Institute of Technology. They have just completed a study of future acoustical properties in a new, roofed, music pavilion for the Ravinia Festival.

"If we use sound waves in proportion to the size of a scale model, we can take the guesswork out of acoustics," contends Howard C. Hardy, supervisor of acoustics and vibrations research at the foundation.

To be proportionate, the test sounds must be of high frequency, some of them ultrasonic," Hardy explained. "Ultrasonic sounds are too high pitched for the human ear, but they act the same as sound waves in full size structures."

Foundation researchers used a scale model 1/20 the size of the proposed Ravinia Park pavilion and studied ultrasonic test sounds 20 times the frequencies of an average orchestra's music. The experiments were done for Holabird and Root and Burger, Chicago architects.

When an ultrasonic sound was made in the model, it was the same as a musical note played by the orchestra in the full sized pavilion.

"With ultrasonics and scale models we can prevent the building of acoustical monstrasities," Hardy contends. "At relatively small cost, we can now predict acoustics, and not have to tolerate what we get when the building is up and the money spent."

Many veterans learn construction trades

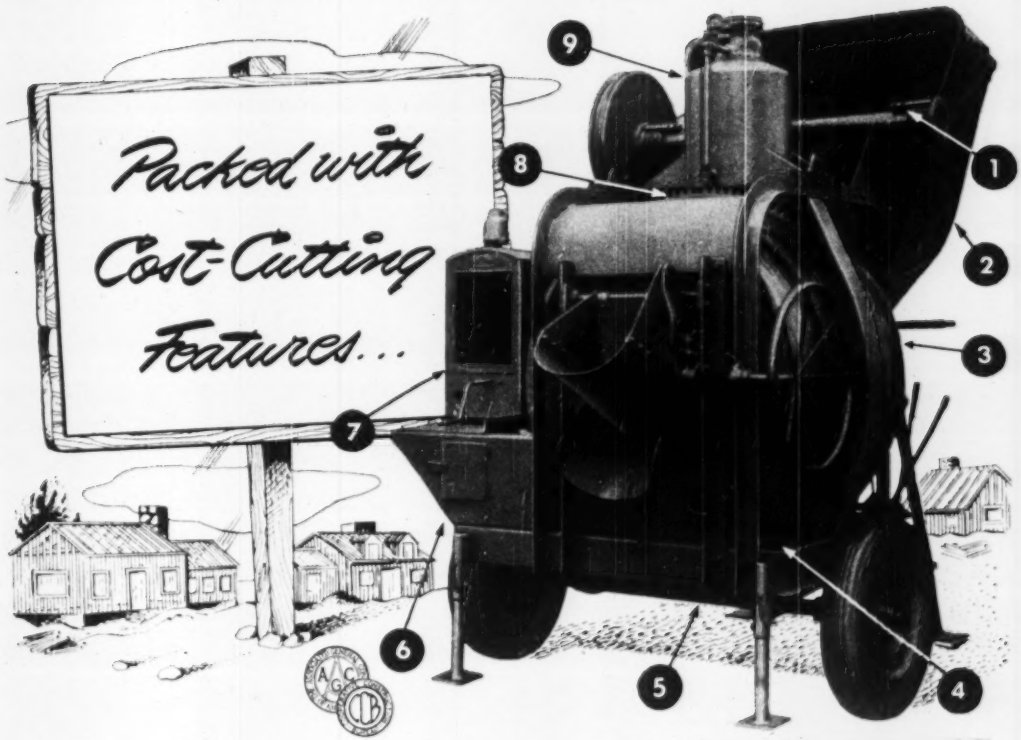
The number of veterans learning construction trades in vocational schools under the GI Bill has tripled over the last three years, a Veterans Administration survey has disclosed.

In the meantime, the total number of veterans learning construction trades as on the job trainees has fallen off by nearly half.

Vocational school enrollments in construction trades courses totaled 51,300 in 1949. In 1947, less than one-third of this number—or 10,150 veterans—were taking similar courses. The 1948 total was 17,620.

The sharpest increase in classroom enrollments took place in brick laying courses. In 1949, a total of 12,504 veterans were enrolled—more than 44 times the 1947 total of 2,692.

Enrollments in tile setting courses rose from 179 in 1947 to 740 in 1949; stone masonry, from 108 to 201; cement and concrete finishing from 134 to 155; plumbing, from 3,048 to 5,029; and carpentry, from 178 to 426.



BLUE BRUTE design shows you what to look for in a portable mixer

Give a Worthington-Ransome Blue Brute 11-S or 16-S Portable Mixer a thorough going over — and get a real revelation of how far mixer design has advanced! For example: ❶ *skip cable* winding shaft, mounted on self-aligning bearings, has grooved spools for longer cable life; ❷ *power loader* with automatic knock-out and brake set when skip raises to charging position; ❸ *skip vibrator*, simple and effective, assures quick transfer of materials from skip to drum; ❹ *drum rollers* of genuine car wheel metal with chilled treads — each roller mounted on two Timken bearings; ❺ *roller sub-frame* under drum prevents concrete accumulation on roller shaft or bearings; ❻ *countershaft* of heat-treated alloy steel in self-aligning ball bearings — all units easily accessible; ❼ *engine* mounted with radiator facing mixer's discharge side avoids dust, clogging and overheating; ❽ *drum drive gear* of one-piece semi-steel casting, machined to true circle; ❾ *water tanks* of accurate, exclusive spiral cut-off type — no rubber to deteriorate.

These and many other features — including Ransome's perfected mixing action, famous for producing better quality concrete — are the reasons why construction men everywhere depend on Blue Brute Portable Mixers for more concrete at less cost. See your nearby Worthington-Ransome distributor for performance facts that prove *there's more worth in a Blue Brute.*

A Blue Brute 16-S Portable Mixer speeds operations on a big housing project in Springfield Gardens, Long Island, N. Y. This machine is one of a fleet of both 16-S and 11-S Blue Brutes owned by Angelo Aragone, who says: "I am well pleased with their performance and economy."

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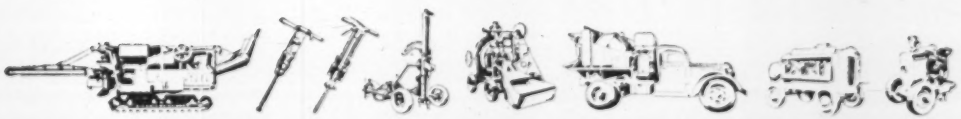
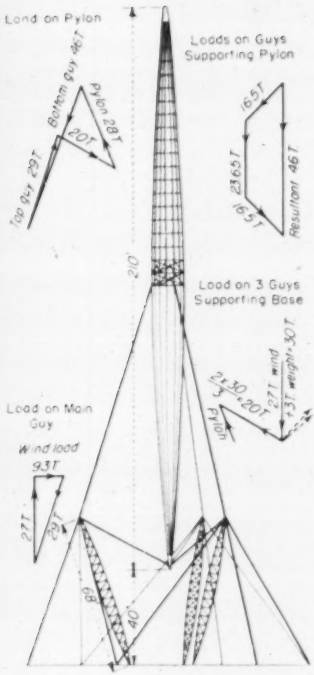


IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

DEVELOPMENTS ABROAD

FESTIVAL SITE—This is an air view of the site on the south bank of the Thames between the Westminster and Waterloo bridges where the 1951 Festival of Britain will be held. Standing in the foreground is the circular foundation of the Dome of Discovery which will be one of the chief features of the exhibition. On the extreme right is seen the County Hall. On the left is the old Shot Tower—Combine photo.



HIGHLIGHT OF EXHIBITION—Architects Powell and Moya of London won first prize for the design of this "verticle feature" in a contest sponsored by the promoters. (ENGINEERING, Jan. 13, p. 49)

Rush buildings for British trade fair

The British festival will be nation-wide but the chief features will be held in London from May through September, 1951, marking the centenary of the Great Exhibition of 1851. It will take the form of a national display showing the British contribution—past, present and future—to the arts, science and technology, and industrial design.

Construction is going ahead rapidly on the 27-acre site on the South Bank of the Thames between County Hall and Waterloo Bridge, an area which had been devastated by bombs during the war.

Perhaps the most striking building will be the Dome of Discovery, the world's largest dome—diameter 365 ft, height 97 ft, material aluminum. It will house the exhibit showing Britain's achievements in exploration and discovery.

The summit of a well known London landmark, the Shot Tower, will be used as a lighthouse. Dominating the exhibition by day and night will be the "verticle feature". It is a lattice-work aluminum tube 250 ft high suspended vertically 40 ft above the ground, shining in the sun and electrically illuminated from inside after dark.

Appraise global effect of currency devaluation

Several months has passed since the British currency devaluation—long enough so that some of the effects on the construction industry, globally, can be determined, even if measure cannot be taken of the full impact of the world currency shakeup.

It probably will be a year or more before final judgment can be passed on the results of devaluation. Meanwhile, a spot check by McGraw-Hill World News correspondents in various key countries has revealed two clear effects:

1. **A shift in trade.** Britain gains in the relative cost of U. S. goods goes up in the sterling area and in third markets (those to which both countries sell). This helps to close the trade gap between the dollar and non-dollar world.

2. **Inflation.** The cost of living climbs with rising import prices, but so far, price increases haven't threatened the competitive advantage that was gained by Britain through devaluation.

Just how the cost of construction equipment and the price of labor, globally, have been affected can be seen in the country-by-country reports that follow.

(Continued on page 60)

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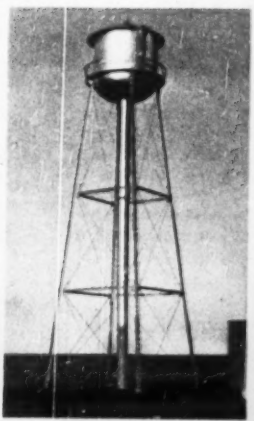

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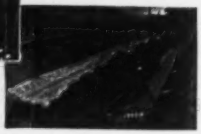

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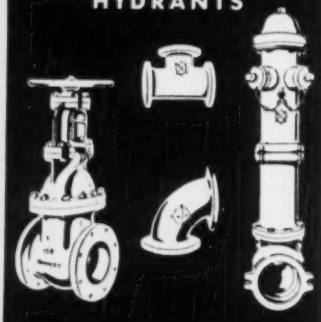

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Britain—Building materials as a whole have hardly been affected by devaluation. The Board of Trade's wholesale price index has remained practically stable since Sept. 18. The rise in the cost of non-ferrous metals, 27 percent by this index, has had little effect in the final prices of the materials of construction; steel prices have remained unchanged, and building labor, although continuing its clamor for wage adjustments, has not been granted any increases.

Sweden—Most materials are produced within the country, and have not shown any effects of devaluation. Labor costs remain stable, but increased fuel costs eventually may show up in prices. Construction is still controlled by the number of building permits issued, rather than by the cost—and this is likely to continue. Prices of chief import items, structural shapes and piping, have been adjusted downwards, particularly by Belgium.

The Netherlands—Cost of materials has been unfavorably affected and wages have been raised 5 percent. Most construction industries have been well covered with raw materials for their running orders, but within a few months, more expensive imports will have to take place. One hope of the construction industry to reduce cost-price is by increased productivity.

Belgium—All materials (except wood, which comes from Scandinavia) come from within the country, so construction costs have not changed. Construction machinery from the U.S. has not yet changed in price.

France—The French construction industry was totally unaffected by last September's currency realignment. It imports no raw materials from hard currency areas; price indexes of construction materials haven't budged for the last five months.

The psychological shock of the devaluation started French labor looking for new wage increases. But labor is in slight surplus in the construction industry, isn't in a good position to win wage raises big enough to force an increase of contractors' rates.

Australia and New Zealand—Impact of devaluation on construction cost is insignificant in New Zealand, but a measurable factor in Australia where devaluation profiteers—wool growers, wheat farmers and metal miners—are trying to keep down tax bills by expenditures on water storages and other improvements in the nature of civil engineering work.

Higher landed cost of American construction equipment is not a major cost factor. Most equipment is built in Australia under license to American principals. Some of it is shipped to New Zealand. Both dominions are buying American equipment second-hand from sterling sources and will not be in the market for new American construction machinery, except for odd items. In Australia, cost on some jobs has been raised because of the use of high-price Japanese and French steel.

Brazil—Devaluation had no major effect on the construction industry. Most materials are acquired locally. Cement imports continue to come largely from the U. S., to fill in the gap where local production fails to meet demand.

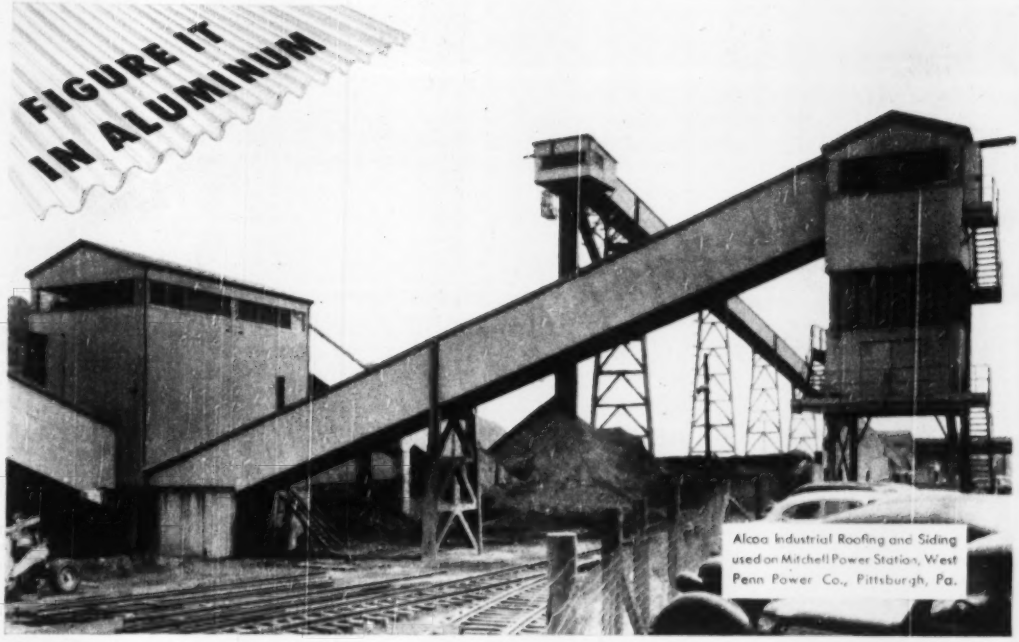
Argentina—Argentina's construction industry has not yet begun to feel the effects of the wave of devaluation which swept the world last fall.

In the opinion of most observers, the eventual result is likely to be a sharp increase in costs. That conclusion is based on the fact that while Peron held the peso at former levels for "vital" imports (only fuels are so classified) he slashed its value from approximately 27 cents to as low as 16 for "essentials" and from 20 cents to 9 for "non-essentials." Average increase in import prices of construction items thus figures to be in the neighborhood of 45 percent once goods begin to flow.

Inter-American Highway

At the recent Panama City conference of ministers of public works from Central American countries, Thomas Guardia, chief engineer of the Panama section of the Inter-American Highway, made a detailed report on that project. He said that available funds are practically exhausted, although much important costly work remains to be done to bring the highway to the desired standard. South American countries are looking to the United States for a continuation of leadership and cooperation for the satisfactory completion of the project. The length of the highway through Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama is 3,261 miles. At present the condition of the road in percentages is: Paved 61.5; all weather, 29.4; dry season only, 4.8; and impassable, 4.3.

The sections absolutely impassable by wheeled vehicles are 25 miles in northern Guatemala, 100 miles in southern Costa Rica, and 15 miles in the adjoining section of Panama.



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Yet all of that merely begins the economies now winning increasing favor for K&M Pipe. This advanced pipe defies electrolysis and is highly resistant to soil corrosion. It doesn't know tuberculation effects; therefore, inside diameter, flow capacity and calculated pumping costs hold constant.

Traffic stresses, earth settlement and chemical attack are all minimized by K&M Asbestos-Cement Pipe — the main that the years don't weaken! As a final economy this pipe is recoverable for re-laying in its original pressure class. You can see why the savings made and the service assured always do credit to those responsible for K&M "Century" Pipe installations. Write us for full data.

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ELECTIONS AND ACTIVITIES

New officers for the Constructors Association of Western Pennsylvania are: President, Roy F. O'Mara, Allegheny Asphalt & Paving Co., succeeding W. E. Crawford; vice-presidents, Frank O. Patterson, Patterson Construction Co., and John E. O'Leary, Pittsburgh-Des Moines Steel Co.; treasurer, Dan Dinardo, Dinardo, Inc.; secretary, Norman T. Wellings, Booth & Flinn; assistant secretary, William R. McQuade, James H. McQuade & Sons.

Wilmington, N. C., Contractors Association has elected officers: Francis Newton, President; Frank King, vice president and treasurer; Walter Cartier, executive secretary; directors, Luther J. Rogers, A. L. Simon, J. W. Hunter.

S. L. Stolte of Minneapolis, Minn., has been elected president of the National Society of Professional Engineers. He is a graduate of the University of Minnesota and is chairman of the Minneapolis Housing and Redevelopment Authority.

David M. Hannah has been elected president of the Niagara Frontier Builders Association of Buffalo, N. Y., succeeding Frederick T. William. Other officers elected were: Vice president, Marvin J. Peterson; William H. Pearce, treasurer, and William R. Albright, secretary. Directors: John N. Highland, Jr., Roy A. Powell, William R. Doll, Oscar R. Giesecke, George E. Weichmann and Mr. Pearce.

George L. Sitton, assistant chief engineer of the Southern Railway system, has been elected president, and Henry S. Loeffler, assistant chief engineer of the Great Northern Railway, senior vice-president of the American Railway Engineering Association.

Consulting Engineers Association of California elected Harold B. Hammill, San Francisco consulting civil engineer, as president to succeed Mark Falk, San Francisco.

Franklin County chapter of the Ohio Society of Professional Engineers has elected Loring G. Huntziker, chief engineer for Layne Ohio Co., as president, succeeding Rawl Edgar, who resigned to become chief engineer of construction of Veterans' Hospitals in the U. S. for the Veterans' Administration in Washington. Cecil Rose, incumbent director-at-large, was promoted to vice-president, with Edward Slowter, of Battelle Memorial Institute, director-at-large.

Columbus, Ohio, section of American Society of Civil Engineers has elected 1950 officers, as follows: Joseph F. Barbee, Ohio Highway Department testing laboratory, president; Howard E. Bonham, Paul A. Uhlman and Associates, first vice-president; Emmett H. Karrer, Ohio State University, second vice-president; and Kenneth B. Anderson, chief deputy Franklin County, engineer, secretary-treasurer.

MAJOR MEETINGS

American Wood Preservers' Association, annual meeting, Rice Hotel, Houston, Tex., April 25-27.

Highway Transportation Congress, Mayflower Hotel, Washington, D. C., April 25-27.

Indiana Section, American Water Works Association, Purdue University, Lafayette, Ind., April 26-28.

American Society of Civil Engineers, spring meeting, Los Angeles, Calif., April 26-29.

Maryland-Delaware Water and Sewerage Association, Fort Cumberland Hotel, Cumberland, Md., April 27-28.

Third Inter-American Congress of Municipalities, New Orleans, La., May 2-5.

N. Y. State Society of Professional Engineers, Hotel Statler, New York City, May 4-6.

Pacific Northwest Conference, ASCE, Winthrop Hotel, Tacoma, Wash., May 5-6.

American Society of Civil Engineers, Pacific Northwest Conference, Winthrop Hotel, Tacoma, Wash., May 5-6.

Producers' Council, spring meeting, Washington, D. C., May 9-10.

Highway Conference, University of Florida, Gainesville, May 11-12.

U. S. Conference of Mayors, Waldorf-Astoria Hotel, New York City, May 11-13.

Florida Highway Conference, University of Florida, Gainesville, Fla., May 11-23.

American Water Works Association, Pacific N. W. section, Hotel Winthrop, Tacoma, Wash., May 11-13.

National Citizens Conference on Planning, Statler Hotel, Washington, D. C., May 12-17.

American Water Work Association, annual conference, Convention Hall, Philadelphia, Pa., May 21-26.

Society for Experimental Stress Analysis, spring meeting, Hotel Statler, Cleveland, Ohio, May 25-27.

Building Officials Conference of America, Indianapolis, Ind., June 4-8.

Central States Sewage Works Association, Hotel Lincoln, Indianapolis, Ind., June 9-10.

Western Association of State Highway Officials, Mapes Hotel, Reno, Nev., June 12-15.

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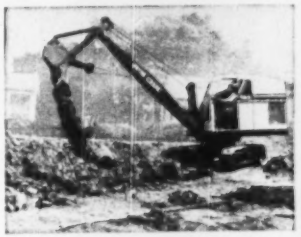
No major part failure on Wayne Crane as rock job wears out 4 sets of manganese teeth



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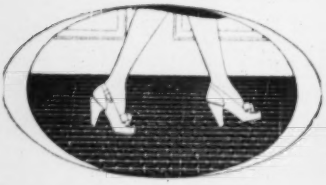

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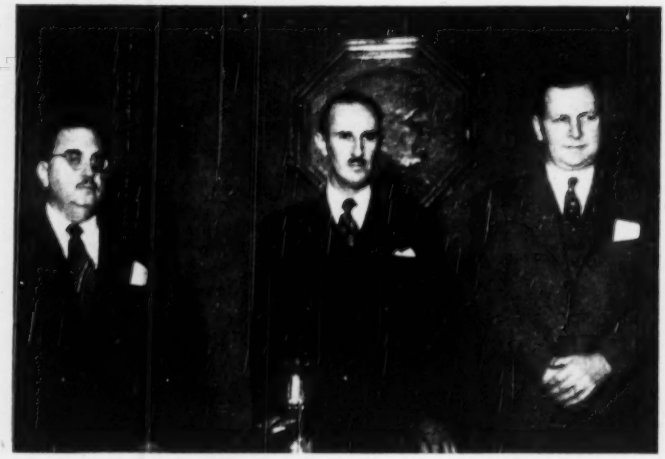
MEN AND JOBS

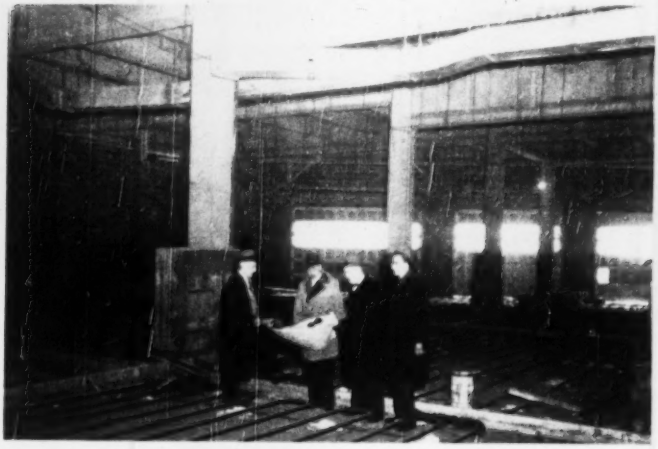
S. Howard Evans, of Philadelphia, Pa., has been appointed chief of the redevelopment and relocation branch of the Division of Slum Clearance and Urban Redevelopment, serving under Nathaniel S. Keith, director. Mr. Evans, a graduate of Syracuse and Colgate universities, formerly was president of the Evans Machinery and Equipment Co., and served as chief of the research and requirements branch of the War Production Board, and as national coordinator for community facilities, 1942 to 1945.

Maj. Gen. Howard Kennedy of Toronto, Ont., has been named by the

(*Continued on page 68*)



The opening session of the recent Mexico City conference of the Inter-American Association of Sanitary Engineers (ENR March 30, p. 23) was inaugurated by Mexican Minister of Hydraulic Resources Adolfo Orvie Alba, center, who welcomed the delegates on behalf of President Aleman. On the left is Ing. Alberto Ortiz Irigoyen, head of the Mexican delegation and vice-president of the Inter-American Association while on the right is Clarence L. Sterling, retiring president of the Association, of Boston, Mass.



Checking expansion joints in radiant heated portion of garage, shops and storehouse of the East New York bus depot, Brooklyn, N. Y., prior to placing of concrete slab are, from left to right: F. Rocke, project engineer of the Board of Transportation; G. F. Dunn, project superintendent for Psaty-Atlas; H. Holbrook, project coordinator of the Board of Transportation and E. E. Lustbader, project manager for Psaty-Atlas. This $5,400,000 job is now 75 percent completed. The general contract work is being performed by Psaty & Fuhrman, Inc., and Atlas Tile and Marble Works, Inc., as co-venturers on the project.

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gives you this exclusive combination of advantages . . .

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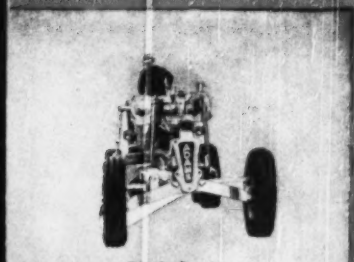
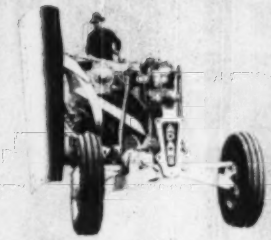
5 Fast, Easy, Servicing Plus World-Wide Dealer Service . . . Saves time and money.



Ditch Cutting



High Bank Cutting

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Reverse Ditching or Blading

On most construction work—ditching, low and high bank slopes, wide shoulder reach, etc.—the operator of an Adams Motor Grader obtains all necessary blade positions right from his station, without making any mechanical adjustments, such as shifting blade on circle or changing lift linkage. Only on occasional work, calling for extreme reach, is it necessary to shift blade on circle.

The ability of Adams Motor Graders to provide such a wide range of blade positions—without mechanical adjustments—is one of the important features (see list above) that makes them the fastest, most efficient and economical graders on the market. See your local Adams dealer for full particulars.

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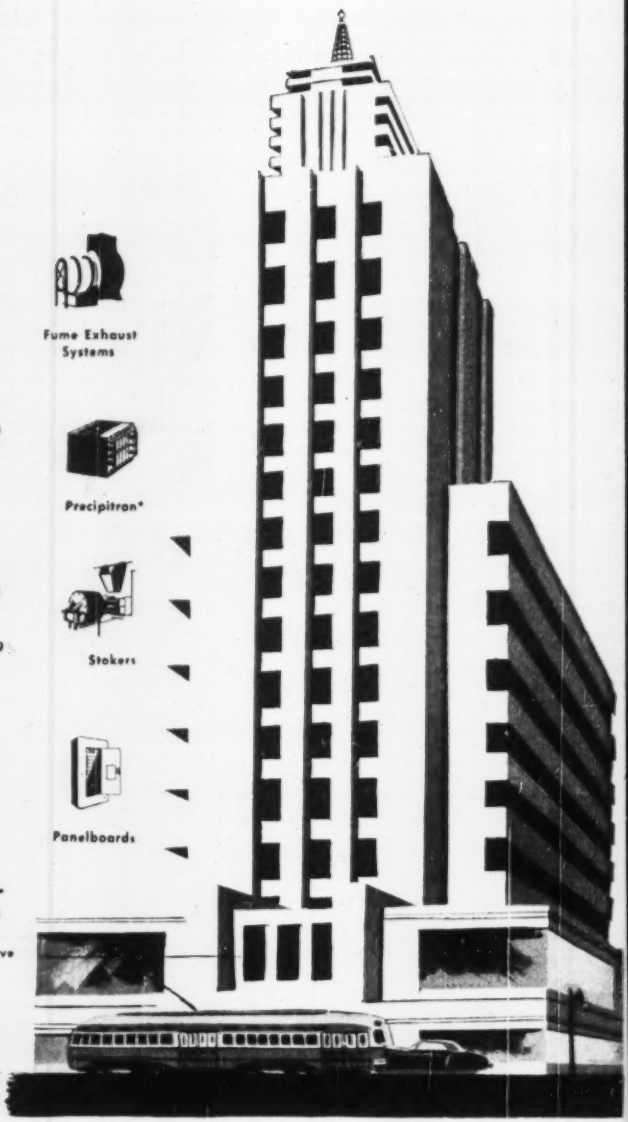
Power Transformers

Capacitors



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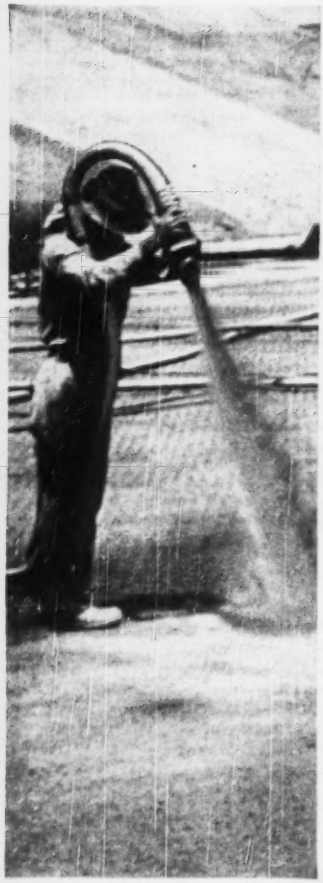
TOUGH



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If you're looking for a cement placement hose with the *right* combination of strength, light weight, and flexibility — try Hewitt-Robins!

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YES, HEWITT-ROBINS gives you the *right* combination in cement placement hose to meet even the heaviest service requirements in mines, tunnels, viaducts, bridges, wherever cement reinforcements are used.

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TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS

(Continued from page 64)

United Nations Assembly, director in charge of a $54,000,000 interim program of aid through work relief projects in the Near East. General Kennedy is a graduate in civil engineering of McGill University and has had considerable construction.

K. B. Rykken, since 1946, manager of the Minnesota highway planning survey, has resigned to become an associate of Burton W. Marsh, director of safety and traffic engineering for the American Automobile Association in Washington, D. C.

Spencer Miller, Jr., New Jersey State highway commissioner, has resigned to become president of the American International college at Springfield, Mass., July 1.

W. S. Sizer is resident engineer for the North Carolina Highway Department on the construction of an east-west highway by-pass which skirts the northern edge of Durham, N. C. **George Copley** and **P. E. Hildebrand** are construction superintendents for the Eidson Construction Co. of Mocksville, N. C., and John H. Brinkley of Thomasville, N. C., respectively, contractors for the project. Other highway department supervisors assigned to the job are: **C. T. Fraley,** senior inspector; **L. E. King,** junior inspector of structures; and **Henry Earp,** junior inspector of grading.

Engineers of Montgomery County, Ohio, supervising the re-flooring of one of their big river bridges with asphalt-surfaced box-corrugated structural steel plate are, left to right: C. H. Shea, chief deputy; C. H. Bauer, county engineer; and O. O. Bieler, bridge superintendent.

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• Save expensive lumber and carpentry labor
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STEEL CURB AND GUTTER FORMS

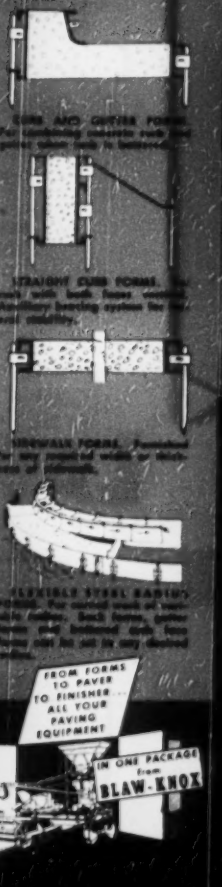
WRITE FOR BULLETIN 2259 for complete information—28 pages of detailed illustrations show form set-ups for every type of work with complete instructions on how to use them. You'll find *your* job illustrated—you'll see how to make more money on every job.

HERE'S the fastest, most economical method of forming concrete curb, curb and gutter, integral curb or sidewalks you ever saw! One set of Blaw-Knox Steel Forms handles *every* job from simple straight work to serpentine or curved shapes, without the expensive carpentry that boosts man-hour costs and cuts profits. Easy to set and strip, they get the job finished on schedule and well within your estimate. You can use them repeatedly in combinations to fit every requirement. Costly hand finishing is eliminated and finished jobs have a smooth perfection impossible to achieve with wood forms. Form maintenance is practically non-existent.

Start your set of Blaw-Knox Steel Forms *now*—expand it at any time to meet future requirements.

THERE'S A BLAW-KNOX "COMPLETE PACKAGE" FOR *EVERY* CONSTRUCTION NEED

There's everything you need for low-cost construction work in the "Complete Package" of Blaw-Knox equipment—Clamshell and Concrete Buckets, Road Forms, Aggregate and Cement Batching Plants, Central Mixing Plants, Subgraders, Paving Spreaders, Finishing Machines, and a complete Ready-Mix Plant including Truck Mixer Loading Plants and the Hi-Boy Trukmixer with the revolutionary Revolving Hopper. Ask for detailed information.



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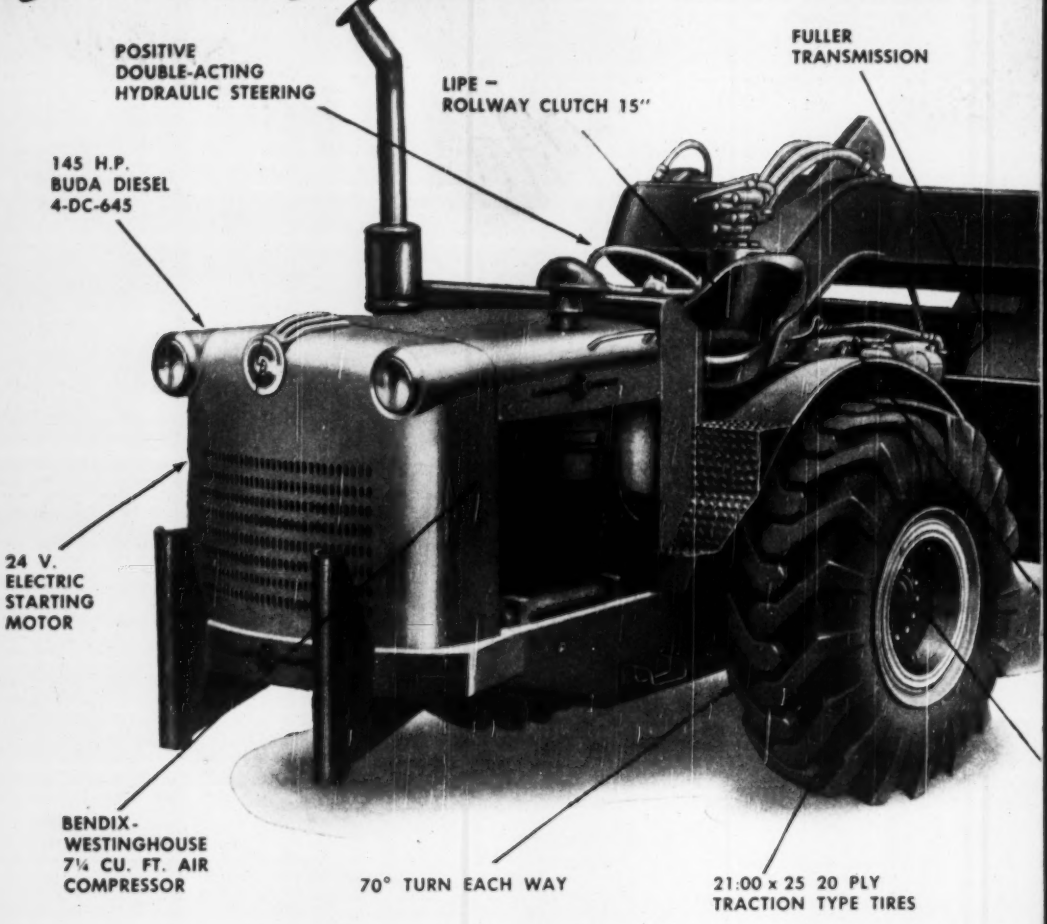

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LPC Motor Scrapers

LPC 6, 8 and 14 yd. Cable Scrapers

LPC 2 and 4 yd. Hydraulic Scrapers

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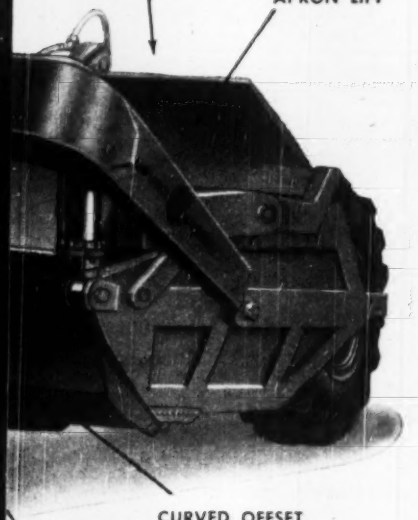
BIG CAPACITY
9 CU. YDS. STRUCK
12 CU. YDS. HEAPED

POSITIVE
FORCED
EJECTION
PLUS
HIGH
APRON LIFT



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FLUID POWER UNIT —
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The new TS200

HERE'S another unit in the famous LPC line of profit-makers—a 9 to 12 yard high-speed earthmover—hydraulically controlled.

Speedy, agile and powerful, the "200" is small enough for all those small yardage odd jobs and utility work and yet has all the capacity and speed necessary for real high production earthmoving on those long haul jobs.

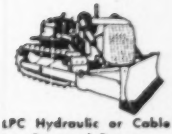
In the TS200 you get all those extra profit-making features that made the TS300 so popular—Big, rugged power, over 16 H.P. per struck yard of capacity—High speed, over 23 MPH (27.4 with optional transmission). Positive double-acting hydraulic steering and big, safe sure-stopping 4-wheel air brakes.

For BIG returns on a SMALL investment look to the "200". See your nearest LPC distributor now. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa — LaPlant-Choate Sales and Service, 1022 77th Ave., Oakland, Calif.

FAMOUS LA PLANT-CHOATE DOZERS

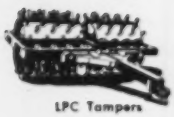
Both angling and straight blade — again available in either hydraulic or cable operated types. See your LPC distributor now!

LPC TW-300 Motor Wagons



LPC Hydraulic or Cable Operated Dozers

LPC Rippers



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No job too big . . .
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It makes no difference whether your job is large or small, simple or complex, public or private, located close to home or in a distant state . . . when you choose the Ætna Casualty and Surety Company as your Surety you can count on prompt, intelligent, on-the-spot service.

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OBITUARY

Byron E. White, 71, for 40 years an engineer with the former Central New York Power Corp., died at Utica, N. Y., April 2. A civil engineer graduate of Clarkson College of Technology, Potsdam, N. Y., in 1904 he entered the employ of the Utica Gas and Electric Co. as a civil engineer. He wrote the chapter on wood stage pipe in the "Hydroelectric Handbook".

Francis M. Taylor, 54, Birmingham Slag Co. chief engineer and also president of the Drummond Trucking Co. died at Birmingham, Ala., March 25. He was a graduate of Alabama Polytechnic Institute, Auburn, Ala., and was a specialist in the operation and design of slag production plants and related operations for the utilization of slag and its preparation for diversified purposes.

Anton Degenhardt, 79, a building contractor in St. Louis, Mo., for 50 years, died March 22.

Arthur Amos, 75, civil engineer and former chairman of the Quebec Streams Commission, died in Montreal, March 23. A graduate of L'Ecole Polytechnic, he entered federal government service and was active in the work of dredging a channel from Quebec to Montreal for ocean-going ships.

Seth F. Michael, 68, retired civil engineer employe of the Portland, Ore., district, Corps of Engineers, died at Vancouver, Wash., March 22. He had just retired after 40 years service. A graduate of Purdue University, he joined the Corps of Engineers in 1910. In 1939 he became assistant engineer on surveys for river and harbor and flood control works on the Columbia and Lower Willamette rivers. In 1938 he was put in charge of all dredging operations and supervised pile dike construction and repairs.

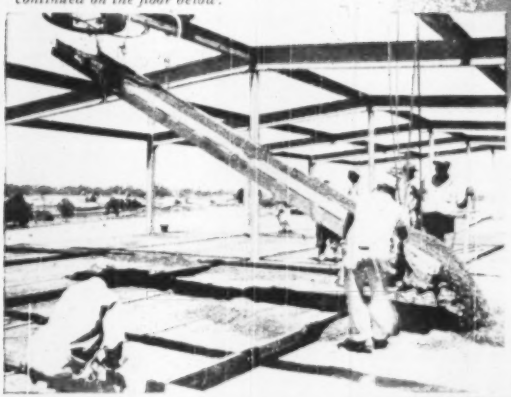
C. J. Carney, 62, Kentucky division engineer of the Illinois Central R.R., died at Paducah, Ky., March 22. He had been with the railroad 44 years.

Robert C. Gowdy, 63, dean emeritus of the University of Cincinnati college of engineering, died at Cincinnati March 27.

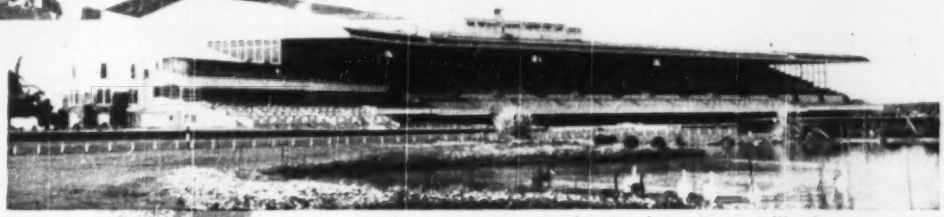
Lucien L. Bass, Jr., former assistant city engineer of Richmond, Va., died there March 23. A graduate of Virginia Military Institute, he had

(Continued on page 77)

how Pittsburgh Steeltex beat the horses at Bay Meadows



While pouring was in progress work continued on the floor below.



Completed renovation of Bay Meadows Track, San Mateo, California

When it was decided last year to extensively remodel and enlarge the famous Bay Meadows Race Track at San Mateo, California, there were just four months grace before the opening race. In constructing the vast concrete decks called for in the plans, it was mandatory that materials be used that would provide speed and economy on the job, and maximum safety for a vast number of spectators. *That's why Pittsburgh Steeltex Floor Lath was the best bet at Bay Meadows* . . . why 200,000 square feet were used on the job. Crews were able to continue normal operations underneath the floors as pouring was in progress, and the slabs were properly reinforced with famous Steeltex heavy, welded wire mesh . . . properly cured because moisture was retained by waterproof backing. For detailed information on how Steeltex can help you win *your* race with construction time, see Sweet's or write for catalog D.S. 145, Dept. ENR, Pittsburgh Steel Products Co., Grant Building, Pittsburgh 30, Pa.

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MECHANICAL JOINT

VALVES—A.W.W.A. approved, iron body, bronze mounted with double disc parallel seat or solid wedge. Non-rising stem, outside screw and yoke . . . spur or bevelled gear . . . hydraulic or motor operated . . . square bottom and low pressure. Also approved Underwriters and A.F.M. series. Shown above is an M & H 30-inch I.B.B.M. Gate Valve with bevel gears extended grease case and 4 inch by pass.

FIRE HYDRANTS
GATE VALVES
WALL CASTINGS
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TAPPING SLEEVES AND VALVES
CHECK VALVES
FLOOR STANDS
SPRING LEVER CHECK VALVES
EXTENSION STEMS
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HYDRAULIC OPERATED VALVES

M & H VALVE AND FITTINGS COMPANY
ANNISTON, ALABAMA

UNIT PRICES BID BY CONTRACTORS

Levee and storm sewers, Jackson County, Ill.

Bids ranging from $219,356[1] to $323,833 were received Dec. 6, 1949, from 7 bidders by the US Engineers for furnishing all plant, labor, materials, equipment and performing all work required for construction of levees and storm sewer, Grand Tower Drainage and Levee District, project 1-B, Jackson County, Ill., Col. R. E. Smyser, Jr., District Engineer, St. Louis, Mo.

Work had to start within 20 days after receiving notice to proceed and must be completed within 240 calendar days.

The low bid totalled 30% more than the government's "reasonable contract estimate." The job was finally awarded in March, 1950, to the low bidder.

The high bid is 32% above the low. Low and high bidders were:

1 S. J. Groves & Sons Co., Minneapolis, Minn. (contract)	$219,356
2 Hoffken Bros., Inc., Belleville, Ill.	234,327
7 J. D. Barter Constr. Co., Harrisburg, Ill.	323,833
Engineer's estimate	160,780

Item	Quantity	Unit Prices 1	2
Embank, levee	thous cy	322	$4.30	$4.55
Fert, seed & mulch	ac	41	110.00	210.00
Backfill, tamped[a]	cy	180	7.70	4.50
Stone, riprap	cy	5	66.00	8.00
Filt base course[b]	cy	5	16.50	6.00
Concr exc st & cmt	cy	56	66.00	100.00
Cmt, portland	bag	336	2.20	1.00
St, concr reinf	lbs	4,818	.165	.15
St, gratgs & misc ir & st	ls	...	2,750	1,380
Culvert pipe[c]	ea	188	15.40	8.80
Diaph, 6'x6'[c]	ea	3	110.00	62.00
Sluice gate	ea	1	550.00	345.00
Met end sect[c]	ea	1	110.00	50.00
Interceptor, 12"	lf	125	6.60	3.88
Interceptor, 24"	lf	1,385	11.00	9.42
Interceptor, 30"	lf	440	16.50	15.04
Interceptor, 42"	lf	415	19.80	21.15
Interceptor, 48"	lf	450	24.20	26.97
Interceptor, 54"	lf	690	27.50	37.88
Remov exist swrs, mhs & vly hss	ls	...	1,320	850

[a]—for 24" drainage structure, cor galv ir pipe 24", with 25¼" wtrtight coupe hnds.
[b]—6" sand and 6" crushed stone or gravel for drainage structure.
[c]—incl. frame, stem, stem guides, operating mechanism & anchor bolts compl for "a".

Aggregates for AEC Reactor Site, Idaho

The U. S. Atomic Energy Commission received 26 bids on January 25, 1950, for the production and delivery to stockpiles of concrete aggregates at the Atomic Energy Reactor Testing Station, near Arco, Butte Co., Idaho. The bid schedule included a base bid and four alternates for increased quantities, also installing and relocating plant.

The plant will have a minimum capacity of 600 cubic yards per day produced in these proportions: sand ¾", 40%; coarse aggregate 1¾-¾", 35%; coarse aggregate 1¼-1", 25%. These ratios may be varied, but not by more than 10%. The AEC will furnish raw materials for the aggregates in natural pits at the site and will install and operate, or assign a representative to operate, the conveyors under the stockpiles, including hoppers, tunnel and incidental work.

Minimum wage rates include: concrete batch plant operator, $1.90; shovel and dragline operators, $2.05-2.30; weighing scale, $1.675; laborers unskilled, $1.40; concrete, $1.55; dump truck drivers, $1.60-2.20.

Contract was awarded to Morrison Knudsen Co. on basis of bid on items 1a, 2a & 6a. Bidders include:

1 Morrison-Knudsen Co., Boise, Idaho (contract)	$135,000
2 Parson & Fitz, Brigham City, Utah	149,500
26 Morgan Const. Co., Florence, Ore.	464,000

Items Aggregates cy	1	Unit Prices 2	26
1a 1-100,000	$ .58	$ .74	$2.35
2a 100,000-200,000	.58	.73	2.25
3a 200,001-300,000	.58	.72	2.25
4a 300,001-500,000	.58	.71	2.25
5a 500,001-1,000,000	.58	.70	2.25
6a Install plant	19,000	2,500	4,000
Base bid: Items 1, 6	77,000	76,500	239,000
7a Robse plant	19,000	5,000	4,000
8a Haul	.20	.08	.22

Airport, Manhattan, Kans.

Ten of the eleven bids received by the Civil Aeronautics Administration Feb. 7 on the Manhattan, Kans., municipal airport were below the engineer's estimate. The contract was awarded to the low bidder, M. W. Watson, whose bid was 19% below the estimate. Wilson & Co., Salina, Kans., are engineers.

The work consists of grading, drainage, construction of runway, 50x2950, and access road and seeding. It must be completed in 150 working days. The job is two miles from a railhead.

Minimum wages to be paid are unskilled laborers, $1.00; mixer and roller operators, $1.25; bulldozer and shovel operators, $1.50.

1 M. W. Watson, Topeka (Contr)	$105,989.10
2 Douglas Const. Co., Topeka	109,909.20
Engineers estimate	130,990.00

Items	Quantity	Unit Prices 1	2
Clear & grub	ls	...	$200.00	$200.00
Unclass excav	cy	70,000	0.23	0.225
Sub-base for pave	cy	4,400	1.70	2.75
7" concr pave reinf	sy	6,420	3.38	3.39
non-reinf	sy	12,610	3.00	2.84
Concr, drn struct	cy	202	60.00	49.00
Storm sewer pipe 18"	lf	400	3.20	4.00
24"	lf	770	4.90	5.70
Inlet grates & fr Type A	ea	5	39.00	50.00
Type B	ea	1	112.00	125.00
Remov exist underdr	lf	5,800	0.08	0.20
Light type surf	cy	225	2.50	2.40
2 way underge duct	lf	306	3.00	3.50
Seeding Perm grass seed	ac	70	38.00	60.00
Cov crop, if nec	ac	70	8.50	15.00

PLENTY TOUGH when the going's ROUGH!

TRACTORS

CRANES • POWER SHOVELS

TRUCKS AND CARS

ROAD BUILDING MACHINERY

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RAILROAD EQUIPMENT

LAMSON "1035" CAP SCREWS

Toughness . . . Strength . . . Precision

Accurately headed, precision threaded and *plenty rugged*—
that, in a nutshell, describes Lamson "1035" Cap Screws.

Lamson pioneered the "high tensile" Cap Screw after years of research
and "on the job" testing.

Today's "1035" product is precision-made on the finest type of bolt-making
machinery—and heat-treated automatically in furnaces
where the atmosphere is scientifically controlled.

As a result, the modern Lamson "1035" Cap Screw is unmatched
for strength, toughness and all-round quality.

That's why you'll be way ahead always to say "Lamson" *before* you say "Cap Screws."

The LAMSON & SESSIONS *Co.*

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BOLTS • NUTS • SCREWS • COTTERS • STUDS • RIVETS • SPECIALS • SCREW MACHINE PRODUCTS

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MONEY-SAVER FASTENERS *Pay Dividends*

LAMSON LOCK NUTS: Economical, vibration-proof. Can be re-used repeatedly.

"1035" SET SCREWS: Cup point type, hardened, heat-treated.

COTTER PINS: Steel, Brass, Aluminum and Stainless Steel.

SPECIAL NUTS: Cone, Barrel, Oblong, Plier, Tri-Slot, Half-round, etc.

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MILLED STUDS: Concentric, accurate, in a full range of sizes.

"BENT" BOLTS: Including U Bolts, Eye Bolts, Hook Bolts, etc.

WEATHER-TIGHT BOLTS: Eliminate counter-boring in wood assemblies.

PIPE PLUGS: Forged Steel, heat-treated.

FOR MORE INFORMATION ON LAMSON *Money-Saver* FASTENERS . . . . . CHECK COUPON and CLIP THIS STRIP

The Lamson & Sessions Company
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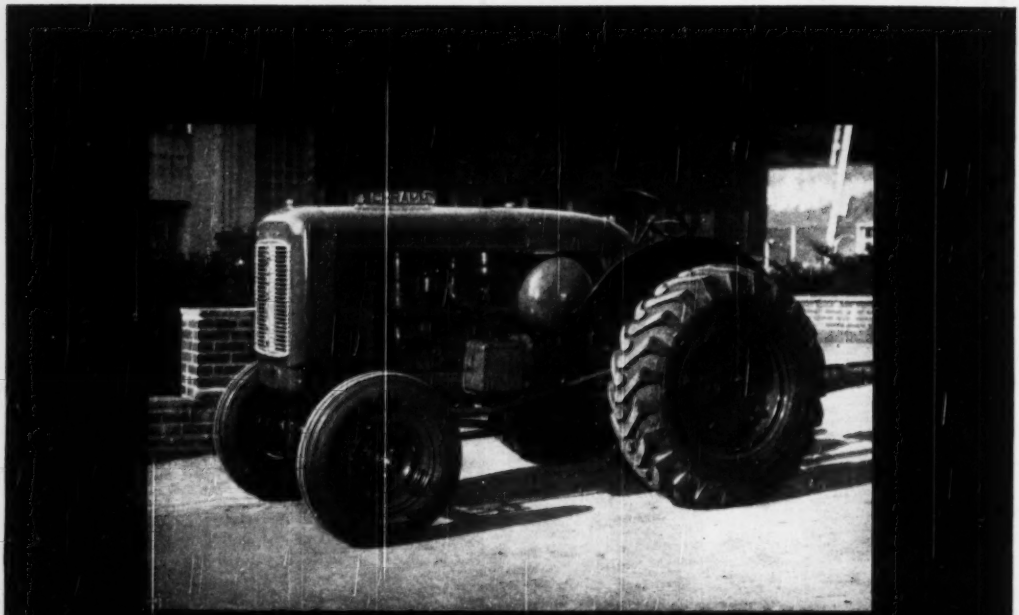
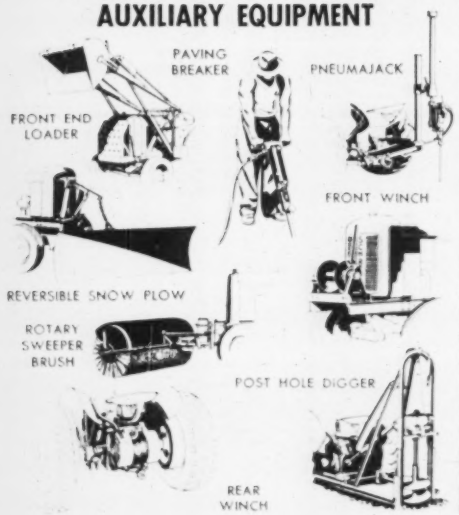


The Pneumatractor

SCHRAMM *PNEUMATRACTOR* AUXILIARY EQUIPMENT



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SELF-PROPELLED AIR COMPRESSOR

SCHRAMM'S newest unit: the *Pneumatractor*; an air compressor that is also a tractor.

Extremely versatile, it is NOT a power takeoff or power unit mounted on a tractor, but is powered with Standard Model 60° *Unistage* or the 105° *Pneumapower* Schramm Compressor. Available with a completely engineered and approved set of accessories, a few of which are illustrated at the left.

FOR FULL DETAILS, WRITE TODAY FOR BULLETIN NEU-50.

SCHRAMM INC.

The Compressor People

WEST CHESTER • PENNSYLVANIA

(Continued from page 72)

worked for eight years for John D. Rockefeller, Jr., in the restoration of Williamsburg, the colonial capital of Virginia.

Allen P. McManigal, 58, professor of engineering drawing at Ohio State University, Columbus, Ohio, died March 28. He had served in the engineering department at the University for 28 years, and also was overseas with the Engineering Corps in World War I.

Robert C. Sutherland, 91, Ottawa, Ont., contractor died March 30.

Joseph W. Kennedy, 64, consulting engineer of Pittsburgh, Pa., died March 27. An engineer for 40 years, Mr. Kennedy was associated with his brother, Julian Kennedy, Jr., in the firm of Julian Kennedy, engineer. He was a graduate of Yale University.

Henry B. Miller, 53, New Paris, Ohio, civil engineer employed by Division 8 of the Ohio Highway Department, died March 26 in Dayton.

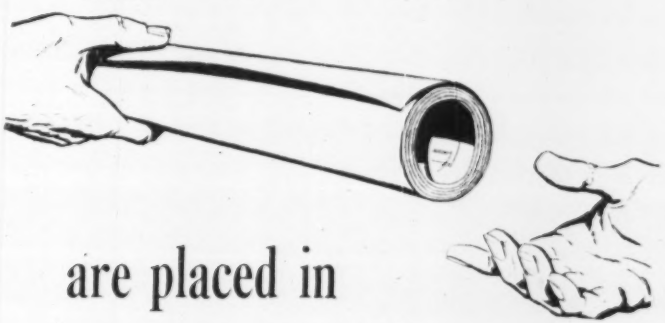
Frank H. Zouck, 84, who was credited with giving Maryland one of the best road systems in the pioneer days of hard-surfaced highways, died March 26 in Baltimore, Md. He joined the Maryland State Roads Commission in 1912 and served as assistant chairman and chairman. During his eight years on the commission, the Washington Boulevard, Belair Road, Frederick Road, and Liberty Road were built as main arteries into Baltimore.

Adolph J. Leydecker, 66, died April 1 in Buffalo, N. Y. Formerly of Leydecker Bros. Inc., engineers and contractors, he had supervised the building of roads in New York and other states. He developed concrete pavements and also did work on the N. Y. State Barge Canal.

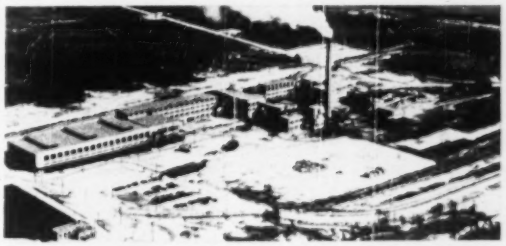
Archibald R. Lawrence, died at Halifax, N. S., March 30. A graduate in engineering from McGill, he had worked in Mexico, New Mexico, Arizona, Ontario, and Nova Scotia. For the last three years he was with the Lawrence Construction Co., Halifax.

John C. Tyler, 71, formerly a highway engineer in the Roanoke, Va., office of the Bureau of Public Roads, died in Charlottesville, April 4. He came to this country from England in 1905 and did railroad work till 1925, when he became chief engineer for the National Surety Co.

Your engineering plans



are placed in competent building hands



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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

N. C., Pineville—B.A. 4/25—Town, 20,500 lin. ft. 6 in. water main, etc. Plans deposit $10. Abernethy & Scott, Hickory, engrs.

Va., Exmore—B.A. 4/25—At office John C. Mapp, Jr., mayor, Exmore, water supply and distr. sys., incl. pumphouse and elevated tank (or), $150,000. Plans deposit $15. Stuart Royer & Assoc., 401 Virginia Bldg., Richmond, engrs.

† Fla., Cocoa—B.A. 4/27—Cty. S. Eng., 575 Riverside Ave., Jacksonville, Zone 1, construct launching area water systems, Joint Long Range Proving Ground, near here. Serial No. Eng. 08-123-50-4. Plans deposit $15. Extended date, CD 3/15.

O., Dayton—B.A. 4/27—Comrs. Montgomery Co., Jessie B. Gates, clk., Courthouse, 24 in. water main from Well Field to Shroyer Rd. Plans deposit $15.

W.S., Watertown—B.A. 4/27—City, 300,000 elevated steel tank on 145 ft. steel tower, concrete piers; laying 4,899 ft. 12 and 8 in. mains; furnishing 2,810 ft. 12 and 616 ft. 8 in. and 4,960 lb. fittings, $75,000. W. G. Kirchoffer, Madison, engr.

Neb., Ashland—B.A. 4/28—City, E. C. Ehrenhard, clk., Ashland, water main extens., $30,176. Hemingson Eng. Co., Standard Oil Bldg., Omaha, engr.

Okla., Stilwell—B.A. 5/1—City, c/o City Clk., Stilwell, 750,000 gal. standpipe, pump station and equip., water main extens., hydrants, $60,000. Plans deposit $20. W. P. Holway, 302 E. 18 St., Tulsa, engr. CD 10/6/48.

† Ore., Ordnance—B.A. 5/1—Army Ordnance Depot, Ordnance, drilling developing 2 deep water wells; furnish, erect 100,000 gal. steel water tank; erect reinforc. pumphouse and furn. 400 g.p.m. pump; furnish, install underground asbestos cement and c.i. water pipe line $301,000.

Pa., McKeesport—B.A. 5/3—City, at office Albert Elko, city clk., City Hall, standpipe and water lines; Contr. 1, standpipe (dia.; Contr. 2, 2 m. g. standpipe; Contr. 3, 16 in. water line from Stewart St. and Grandview Ave. to proposed standpipe; Contr. 4, 12 in. water line from Booster Station to Sumac St. and Dinsmore Ave.; Contr. 5, electrical work. Plans deposit $25. Chester Engineers, 210 East Park Way, Pittsburgh, Zone 12, engrs. CD 9/29/47.

Tex., Houston—Bids Asked—Rotterdam Builders, Inc., 5214 Linden St., water lines, facilities, Old Spanish Trail, between Scott and Tierwester St., $45,000. John G. Tunney, 2405 San Jacinto St., engr.

LOW BIDDERS

▲ Md., Baltimore—City Bureau Water Supply, 503 Municipal Bldg., Zone 2, Apr. 5, lining approx. 38,625 lin. ft. Liberty Rd. Patapsco Tunnel, incl. debris and spoil removal, etc. from Samuel R. Rosoff, Ltd., 3001 Druid Park Dr., $2,866,000. CD 1/28.

S. C., Columbia—City, Apr. 4, water mains from Carper & Perrycleat, c.o. owner, $164,177. CD 3/29.

N. D., Fargo—City, City Hall, 2-story, 25x65 ft., brick, the filtration plant, housing chemical feeding equip. and chlorine room, from T. F. Powers, Constr. Co., 212 4 Ave. N., $166,800.

CONTRACTS AWARDED

Fla., Jacksonville—City, City Hall, water distr. sys. extens., improv. north of St. Johns River, Part 1, sts. N. 2 2532, to Joseph Reinerton, 46 N. 1 e. St., Miami, Zone 1, $598,650. Bids 3/2, awarded 4/6. CD 3/10, under (1).

Ind., Muncie—Muncie Waterworks Co., Burlington Pike, 20 in. water mains to connect plant with downtown and industrial areas, own forces, $150,000. CD 7/1.

Mass., Bourne—Town, W. Foley, cmr., Water Dist. el., water lines, various streets, Zenith Vestal Co., Inc., 1 Summer St., Stratton, $47,050. (Correction—name of contractor is Zenith Vestal Co.)

O., Cleveland—City, City Hall, water distr. sys. extens., 24 in. water mains on Detroit Rd. to Kenwood Ave., 12 in. Clinton Ave., $337,952. Bids 2/28, awarded 3/7. CD 8/18.

Okla., Cushing—City, filter plant (prime), pump equip., water mains extens., to St. Louis & S. Western Ry., tower. Bids: Oklahoma City, Zone 2, $158,741, est. $175,000, to Leland Luke Casing Co., and subsidiary to H. S. Moore, Add. $105,942, est. $120,000, Awarded 4/27, V. V. Long & Co., Oklahoma Bldg., Oklahoma City, engrs. CD 12/2.

Tex., Anson—City, c.i. water mains, laterals, valves and fire, Approx. $30,000. CD 12/2.

Tex., Dallas—City, City Hall, Wards and Residence Sts., 24 in. sanitary sewer main and 27" C.I. Water Rm., to Whiterock Creek, Contr. 3102, Bids Apr. 5, $348,203. CD 12/1/48.

Tex., San Antonio—Pierce & Cline, Taylor, water lines to Owens & Stewart, Jourdanton, $46,660. CD 3/3.

Que., Quebec City—Municipality, clearing, sealing, mains, etc., also $400,000 l.t. mains, city engr. CD 1/7/48.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Md., Towson—B.A. 4/24—Comrs., Baltimore Co. Court House, Contr. 201-S, incl. Part A-1, 51,200 lin. ft. 6 to 15 in. vitr. clay pipe; Part A-2, 3,240 lin. ft. 8- to 24-in. C.I. pipe; Part A-3, 675 lin. ft. 6 and 8 in. G.I.P.X.; Part B-1, 22,490 lin. ft. 6- to 10- in. vitr. clay pipe; Part B-2, 1,065 lin. ft. 8- to 16-in. C.I. pipe; Part B-3, sewage lift station, Part C, sewage pumping station 26x26x 17 ft., and 16 ft. superstructure, Whitemarsh Run sewerage system. Plans deposit $5. Wm. F. Neale, Courthouse, c.o. engr. CD 1/26/44, under Water Supply.

Ill., Belleville—B.A. 5/1—City, H. V. Calhoun, mayor, City Hall, extens. sewers, 2,865 ft. of 8-and 10-in. vitr. clay and 64 ft. 8 in. C.I. pipe, Russell & Axon, 408 Olive St., St. Louis 2, Mo., engrs. CD 12/8/47.

Ky., Providence—B.A. 5/2—City, c/o C. E. Barnhill, clk., City Hall, uncovering, repair, resigning and jointing and concrete encasing approx. 2,200 lin. ft. 15 in. vitr. clay sanitary sewer. Plans deposit $10. Johnson, Depp & Quisenberry, Inc., 521 Frederica St., Owensboro, engrs.

Wash., Olympia—B.A. 5/2—City, City Hall, completing 3 in. interceptors and branch sewers to tie sewerage sys. together, $400,000. H. G. Ponik, City engr. CD 8/29/46.

Ind., Chesterfield—B.A. About 5/15—Town, Town Hall, storm sewer and sanitary sewerage sys., also 84 manholes on catch basins, 2 head walls, 2 flood gates, $178,000. Virgil Lee Anderson, consult. engr.

Ark., Monticello—Bids Asked—City, sewage treatment plant and exten. to sewerage sys., $250,000. Plans deposit $50. Marion G. Crist & Assocs., Union Life Bldg., Little Rock, engrs. CD 10/1/48.

† Tex., Houston—Bids Asked—Rotterman Builders, Inc., 5213 Linden St., storm sewers $50,000, sanitary sewers, $60,000, on Old Spanish Trial between Scott and Tierwester Sts. John G. Tunney, 2405 San Jacinto St., engr.

SOON LETS CONTRACT

Colo., Golden—Adolph Coors Co., Joe Coors, vice pres., Golden, soon lets contract sewage disposal plant, $300,000. Ripple & Howe, Coser Bldg., Denver, archt.-engrs.

Tex., Fort Worth—Richland Development Co., Grapevine Hy., soon lets contract sanitary sewerage sys. and treatment plant, $65,000. Plans deposit $25. Freese & Nichols, 407 Daniger Bldg., engrs.

LOW BIDDERS

Calif., Atascadero—State Div. Architecture, P. Wks. Bldg., Sacramento, Apr. 4, sewage disposal plant of high filter type and water supply project, incl. 1 m.g. water storage reservoir, booster pump station at Atascadero State Hospital, from Ofcco Constr. Co., 2650 Cherry Ave., Long Beach, $173,255. CD 3/14.

Calif., Los Angeles—City, Bd. P. Wks., City Hall, Apr. 5, Ballona Creek interceptor sewer, incl. sewerage pump plant, force main, gravity sys., from P. & J. Artukovich, Inc., 13350 San Pedro St., $417,956. CD 3/22.

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, Apr. 4, sanitary sewers in Eagle Rock Sanitation Dist. No. 1230, from Max Jaspan, 1438 S. Wilson Ave., $73,929. Est. $85,950. CD 3/15.

Calif., San Francisco—Dpt. P. Wks., City Hall, Apr. 5, reconstruct sewers, removal trace on Jackson St. from Drumm to Battery Sts., spec. 20,540, from Chas. L. Harney, 575 Berry St., $121,178. CD 3/29.

Kan., Gardner—City, Wayne Rinne, clk., Mar. 28, Part A, sewage treatment plant, incl. Imhoff Tank, lift station, dosing tank, trickling filter, final tank, sludge bed, involving 700 cu. yd. rein.-con., 700 cu. yd. excav., 485 lin. ft. 6- to 10-in. vitr. clay pipe, 269 lin. ft. 4- to 10-in. C.I. pipe; Part B, sanitary sewerage sys., incl. 23,223 lin. ft. 8 and 10 in. vitr. clay pipe, 23,783 lin. ft. trenching, backfilling 4- to 24 ft., 69 manholes, 2 pumping station, from Wendell Constr. Co., Newton, $128,223. Est. $130,-008. CD 3/17.

Va., Franklin—City, L. N. Wilkinson, mgr., Apr. 4, distr. sys., Part 1, from C. H. Lawson, Williamsburg, $218,-960. Collection sys., Part A, to Preston, 4e05 Courts St., Portsmouth, $149,739. CD 3/7.

† Washington—Bureau Reclamation, Dpt. Interior, Coulee Dam, rejected bids Feb. 21, drainage, sewerage and water distr. systems for Mason Addn. and commercial area for City of Coulee Dam, Columbia Basin Proj., spec. R2 CB-45 (Region 1). CD 2/3.

Ore., Portland—City, City Hall, Apr. 4, construct and test outfall sect. in sewage treatment proj., incl. 1,900 ft. 42-in., 1,900 ft. 72-in., 300 ft. 82 in. submerged and 5 structures as inlets and outlets as two steel pipes across Columbia and Oregon Sloughs of Columbia River and extend 700 ft. into Columbia River, from Manson Constr. & Eng. Co., 821 Alaska Way, Seattle, Wash., $715,740. CD 4/3.

Wis., Waupun—City, Mar. 28, general contract sewage treatment plant from Edward H. Meyer Constr. Co., Neenah, $285,000. CD 3/8.

CONTRACTS AWARDED

Ill., Carlinville—City, municipal disposal plant, to General Builders Co., 2201 S. Spring St., Springfield, $192,017. Awarded 4/4. CD 5/27/46.

N. Y., Croton-on-Hudson—Village, Municipal Bldg., sewage treatment plant, from Construction Plus, 106 Sherwood Ave., Downing, $179,433. Bids 3/21. CD 2/14.

Okla., Midwest City—City, sewage disposal plant, to Southern Constr. Co., 2405 W. Reno St., Oklahoma City, Zone 4, $106,673. Est. $135,000. Awarded 4/3. J. M. Plank, 1323 N. Robinson St., Oklahoma City, engr. CD 3/2.

Tex., Houston—Home Owned Properties, Inc., Scanlan Bldg., sanitary sewer, junction sys. and storm sewers to Tellepsen Constr. Co., 3710 Telephone Rd. Approx. $137,000 and Approx. $118,000 respectively. CD 5/31.

Tex., Laredo—City, sanitary sewer laterals, force account, $75,000. Hugh S. Clock, City engr. CD 11/23.

Tex., San Antonio—Pierce & Cline, Taylor, sanitary sewers to Owens & Stewart, Jourdanton, $53,315. CD 3/3.

Wash., St. John—Town, Town Hall, treatment plant to P. S. and Maitland Construction, 4507 S. E. Milwaukee St., Portland, Ore., $59,200. Bids 3/31. CD 3/10.

Ont., Portsmouth—Village, pump station, equipment of sewer project to M. Barr Constr. Co. Ltd., 561 Division St., Kingston. Approx. $187,105. Bids 3/31. CD 3/29.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works, industrial buildings $63,000; other buildings $250,000.

Classes of Construction

(Name number of Listing)

Water Supply	Earth, Rock
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Tunnels & Subways	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK (including appointment of engineers or architects).

BIDS ASKED (new advertisements only). For full calendar see last preceding issue of ENR.

LOW BIDDERS (in the form "$900,000 value all low bidder shall write the first reports published [engineer, owner, amount except where award is not made at that time. Bidders in this case, a supplementary contract award report will be published.

CONTRACTS AWARDED. Except awards to low bidder will only be reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Information Requirements
▲	Project of $2,000,000 or over
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

BRIDGES

BIDS ASKED

Md., Baltimore—B.A. 4/26—City, Bureau Hys. & Asphalt Mtls., Bureau Water Supply, Kelly Plant, Report Rd. at Mckay, 4/4 M. Asphalt & Bit. Conc. Base, Zone 1, engr.

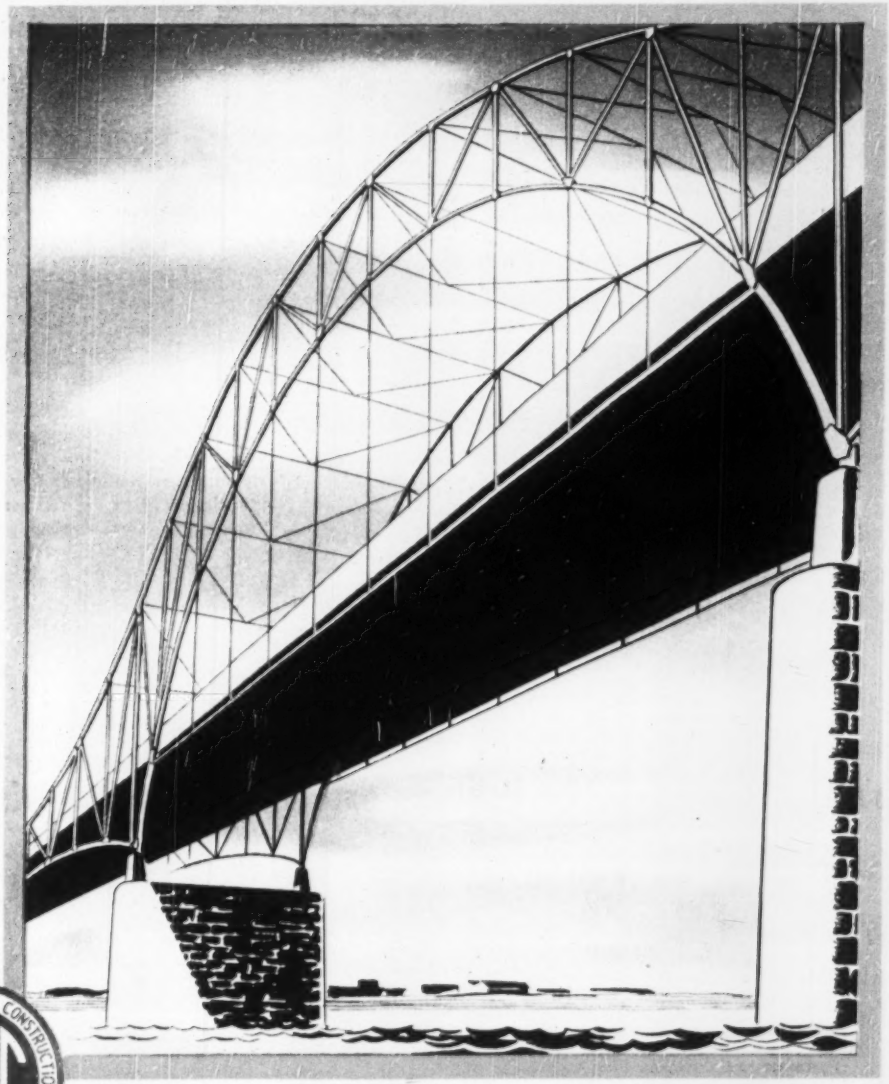
O., Dayton—B.A. 4/27—Comrs. Montgomery Co., Jessie B. Gates, clk., Courthouse, Bridge No. BR 29-0.72, channel excav., roadway relocation and improv., on Little York Rd., Butler Twp. CD 2/21/35.

Minn., Austin—B.A. 4/3—Mower Co., C. M. Hubbard, and 1 beam span, 289 ft., Bridge 7016, over Red Cedar River, 3 mi. north and 1 mi. west of Lyle, Proj. 6-20-01, (SAR-A), Mower, Proj. S. Rte. 105-1. Approx. $60,000. Plans deposit $1.50.

LOW BIDDERS

California—State Pub. Hys., Sacramento, Apr. 4, 2 span steel girder, for Wm. Jones Creek over Rivety

(Continued on page 82)



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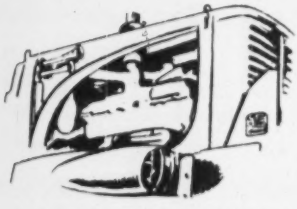
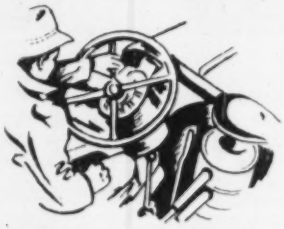
You can heap 'em high and haul in a hurry, when you have a Heiliner! The Heiliner is available with an 18-cu. yd. scraper or 20-cu. yd. bottom-dump wagon.

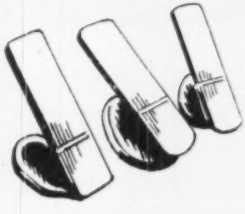
Here's why operators like Heiliners and move more dirt with them!



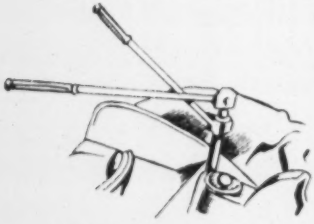
Power-packed Cummins Diesel. 200 h.p. engine gives you a high top speed (25 m.p.h., loaded) and plenty of lugging power. Compression release gives quick, easy starts in any weather.



Patented Hydro-Steer. Makes handling effortless. Eliminates jack-knifing, over-steering. You can turn the Heiliner with one hand in a 22-foot radius.



Air-assisted clutch. Clutching is much easier for the operator — helps make him more productive.



Adjustable control levers. The Heiliner cable power control-unit is within finger-tip reach. Control levers are adjustable to suit the operator's convenience.

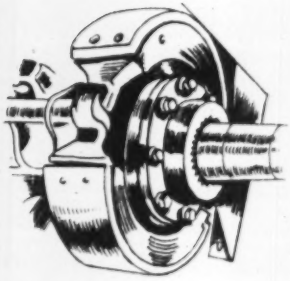
Good visibility. No obstructions block operator's vision ahead or behind. He can always see how he's doing — for maximum loads and faster cycles.

Comfortable seat. Reduces operator fatigue, by absorbing the shocks in rough going.

Heiliners

are built to help you meet schedules, save money!

They move more dirt faster ... at less cost!



4-wheel brakes. Heavy-duty two-shoe air brakes. Also auxiliary hand controls provided.

Final planetary drive reduction gears are easily accessible. Service can be performed without removing wheel or disturbing brakes or hub bearings.

TIME schedule tight? Cost of moving dirt figured pretty close? Tackle the job with Heiliners. They really pay out in all kinds of weather, over all kinds of ground and fill conditions.

Ask any Heiliner user. You can bet your bottom dollar he'll tell you how a Heiliner *stays* on the job. How it cuts downtime and maintenance costs. How it's easier for your operator to run and to make a good showing. How it reduces operator fatigue, so that your men move more dirt per shift.

Then, talk to the operator . . . He'll tell you he likes the easy way a Heiliner steers . . . the quick starting . . . the lugging power in the toughest going . . . the unobstructed vision . . . the convenient controls . . . the safety.

All these Heiliner advantages add up to one thing: You make more money on your dirt! Use Heiliners and keep the pay in pay dirt on all your jobs.

Ask your Heil distributor to demonstrate the Heiliner. Ask him about Heil's complete line of earthmoving equipment. Or write today for bulletins.

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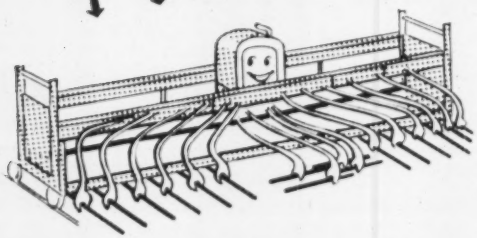
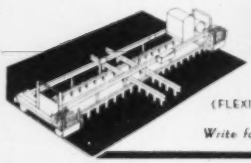
that FLEX-PLANE BAR INSTALLER DEMONSTRATES $AVING GENIUS



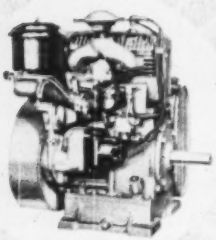
Eliminates use of expensive dowel holding devices. Vibrates dowels and tie-bars to exact position in plastic concrete; forms transverse joints and cuts and installs longitudinal joints . . . all in one operation.

It has made money for other contractors. Before you bid, investigate the Flex-Plane Mechanical Bar Installer.



FLEX-PLANE
WARREN OHIO
(FLEXIBLE ROAD JOINT MACHINE CO.)
Write for Bulletin K-10-P

FOR YOUR 7 TO 13 H.P. POWER JOBS
Two-Cylinder
WISCONSIN
Heavy-Duty
Air-Cooled
ENGINES



Models TE and TF standard engine illustrated, also available as complete Power Units with Clutch Take-Off Assembly or with Clutch Reduction Assembly.

Designed and built to traditional Wisconsin Motor heavy-duty service standards, this pair of Air-Cooled 2-cylinder engines provide ideal power either as component units on original equipment, or as stationary or portable general purpose power within the 7 to 13 hp. bracket.

The Model TE delivers from 7.2 to 11.2 hp. and the Model TF turns up 8.6 to 13.3 hp. within a 1400 R.P.M. to 2600 R.P.M. speed range. Features include: tapered roller bearings at BOTH ends of the heat-treated, drop-forged crankshaft; high tension rotary-type OUTSIDE Magneto with impulse coupling; oil bath air cleaner; ¾" standard float feed carburetor; positive lubrication by Pump with individual oil stream to each rod . . . *plus* dependable air-cooling at all temperatures from sub-zero to 140° F.

For "Most H.P. Hours" of on-the-job power service, specify Wisconsin Air-Cooled Engines . . . single cylinder, 2-cylinder and 4-cylinder, in a complete power range from 3 to 30 hp.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 14, WISCONSIN

(Continued from page 78)

Creek, grading 4.7 mi. between Smith River Bridge and 1.2 mi. north of Winton Corners, Del Norte Co., from N. M. Ball Sons, 685 Delaware St., Berkeley $393,375; reinf.-con. slab bridge and plant mix surf. 0.6 mi. across San Joaquin River about 6 mi. east of Gustine, Merced Co., from H. W. Ruby, 2851 Northrup Ave., Sacramento, $102,496. CD 3/3.

Connecticut—State Hy. Dpt., Hartford, Apr. 3, 50 ft. clear square span rolled beam bridge over Maple St. on East Hartford-Glastonbury Expressway; bit. macad 845 lin. ft. Myrtle St., East Hartford, from Brunalli Constr. Co., Main St., Southington, $114,928. CD 3/22.

Ia., Muscatine—Bd. Supervs., Muscatine Co., Mar. 30, 22'x82 ft., continuous steel girder bridge with concrete piers, stub abutment on east end and U abutment on west end, from A. M. Cohron & Son, 6210 S. W. 12 St., Des Moines, $181,378, J. Dougherty, co. engr. CD 3/23.

New Jersey—State Hy. Dpt., Trenton, Apr. 6, paving 0.688 mi. Grassy Sound Bridge approaches Rt. S. 49, Sect. 5 B, Lower Twp. and City of Wildwood, Cape May Co., from Pangia Constr. Co., Atco, $159,488. CD 3/17.

Tex., Houston—Harris Co., Courthouse, Mar. 31, reinf.-con. bridge and approach roads, spanning Buffalo Bayou, from Farnsworth & Chambers, Inc., Box 74, $245,492. Est. 240,368. CD 3/20.

Wash., Seattle—King Co., County-City Bldg., Zone 4, Apr. 3, reinf.-con. steel girder bridge on concrete columns, 51 Ave. S., replacing Bridge 3147, from T. N. Buchanan Co. Inc., Inc., 835 W. 48 St., $76,584.

N. B., St. John—City, H. D. Hopkins, common clk., Apr. 5, 1,200 ft. long reinf.-con. Mill St. viaduct, with two 22 ft. highways extended by 10 ft. at either side for bus paring ramps on both ends, balustrade full length, lighting, from Richard & B. A. Ryan Ltd., 1705 William St., Montreal, Que., Approx. $444,460. CD 3/8.

STREETS AND ROADS

BIDS ASKED

S. C., Greenville—B.A. 4/27—City, T. C. Adams, engr., City Hall, grading, sidewalks, curb and gutter and storm sewers. CD 12/30.

Md., Baltimore—B.A. 4/29—City, Bureau Hys., 303 Municipal Bldg., Zone 2, Hy. Contr. 1034, sheet asph. street resurf. Plans deposit $5. Jas. H. McKay, hy. engr. CD 1/18.

Tenn., Chattanooga—B.A. 5/9—At office P. R. Digiati, comr. Streets and Sewers, City Hall, bit. resurf. Proj. P-1-1950; scarify and reshape 7,370 sq. yd.; bit. tack coat 21,951 gal.; hot plant mix bit. material 10,000 tons; adjust 240 manholes. Plans deposit $10. CD 4/13/48.

Calif., Sacramento—B.A. 5/17—Sacramento Co. Courthouse, impr. streets in Arden Park Unit No. 9, Approx. $50,000. John Spink, California Fruit Bldg., engr. CD 10/18/49.

† N. M., Albuquerque—B.A. About 5/18—U. S. Eng. P.O. Box 1538, AFC pavement and drainage, Stage IV, Sandia Base, Serial No. 241-50-47. Plans deposit $25.

Tex., Houston—Bids Asked—Rottersmann Builders Inc., 5213 Linden St., street constr., paving Old Spanish Trail between Scott and Tierwester Sts., $70,000. John R. Storey, 2405 San Jacinto St., engr.

LOW BIDDERS

California—State Div. Hys., Sacramento, Apr. 5, plant mix on cement treated surf. 2.4 mi. between Scenic underpass and 2 mi. south of Salinas, Monterey Co., from Granite Constr. Co., Box 900, Watsonville, $191,842.**plant mix surf. 8 mi. between Spring Hill and Weed, Siskiyou Co., from Rand Constr. Co., Box 1339, Bakersfield, $448,728.**plant mix surf. central portion 2.4 mi. between junction of county road to Vacaville and 2.5 mi. north, Solano Co., from Fredrickson Bros., 1259 66 St., Emeryville, $72,772. CD 3/17.

Connecticut—State Hy. Dpt., Hartford, April 3, bit. macad. 3,964 lin. ft. Pitkin St., East Hartford, from Costello Constr. & Eng. Co., 15 Pomfret St., Hartford, $76,823; c. conc. 12,802 lin. ft. dual lane and b. cond. temporary, North Meadow Expressway, Hartford-Newington, from SP 56 Gunther Constr. Co., 728 Valley Rd., Providence, R. I., $391,308. CD 3/22.

▲ Kentucky—State Hy. Dpt., Frankfort, Mar. 31, from Breslin Constr. Co., 1801 S. Brook St., Louisville, c. conc. widn. and b. conc. surf. Class I, 13.717 mi. Hopkinsville-Madisonville Rd., Proj. 111(6); F 171(5), S.P. 24-5, Christian Co., $259,008; widn. surf. 10.1 mi. Bee-Pleasant Run Rd., S.P. Group 19 (1950), Marshall Co., $213,525; widn. surf. 21.553 mi. S.P. Group 20 (1950), Hopkins and Muhlenberg Counties, $293,781.**from Arnett Constr. Co., Berea, traffic bound limestone 11.3035 mi. Stacy-Fork Rd., Greasy Creek-Wrigley-Blaine Mill Rd. and Lake Rd., Proj. BR-88-1981 (88-188-1581), Morgan Co., $73,748; traffic bound limestone 18.99 mi. Woodlawn-Drake Springs-Bowling Rd., Proj. 114-4, Rd. 114-4, Pt. 1, Warren Co., $104,063.**from Allen-Cotell Co., Winchester, bit. surf. Class I, 0.566 mi. Winchester-Richmond Rd., Proj. F 167(3), S.P. 25-82, Clark Co., $115,622.**from Corbett-Davidson Sons, & R. I. Cocke, Mayfield, traffic bound limestone 3.053 mi. Beyond-Berrys Ferry Rd., Proj. S 67(3), S.P. 70-10, Livingston Co., $63,543.**from J. D. Barter Co., Hazelgreen, c. conc. bank or creek grav. 0.96 mi. Paducah-Cane Syringe Rd., Proj. S 75(2), S.P. 74-412, McCracken Co., $103,150.**from Porter Dewitt Constr. Co., Poplar Bluff, Mo., Class I water-

(Continued on page 85)

Because this can be 12 different doors

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One of 135 Fenestra Doors in Mondeville High School, Flint, Mich. Architect: Bennett & Straight of Dearborn. Contractor: Karl B. Foster, Flint.

The secret is a clever hinge arrangement—plus a muntin, a glass panel and a metal panel. This same beautiful Fenestra* Hollow Metal door can be used: Swing-in or swing-out . . . left or right hand—each with panels of metal or glass . . . with or without a muntin.

It costs a lot less because Fenestra craftsmen can give you the variety you need and still concentrate production facilities on a few basic high-quality types. Naturally, when production waste in time and money is eliminated, quality goes up and cost comes down.

This door is tough—it can be kicked and slammed and still look good. After years of use, a coat of paint will make it like new again.

This door is easy to handle—it swings open and shut smoothly, quietly. That operating balance never changes. Each door is packed with sound-smothering insulation.

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Please send me, without obligation, information on Fenestra Stock Hollow Metal Doors.

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Company

Address

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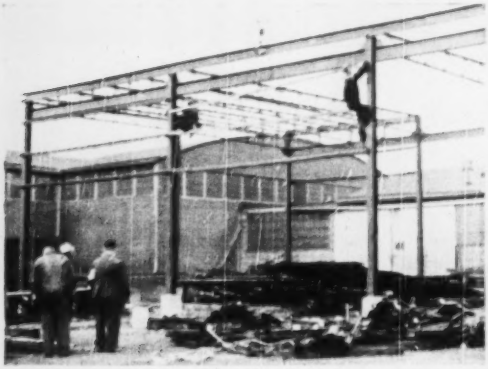

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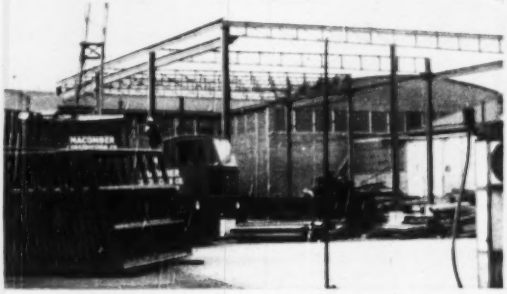

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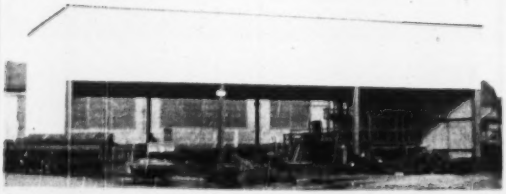

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(Continued from page 82)

bound grav. b. conc. 7.874 mi., Paducah-Cadiz (Briensburg Cut off) Rd., Proj. F-163(19), S.P. 79-333, 79-93, Marshall Co., $192,272***from Myers-Green, Hazard, traffic bound limestone 1.987 mi., Hazard-Chavies Rd., Proj. S 45(3), S.P. 97-162, Perry Co., $66,654***from State Contg. Co., Hartford, Class I and waterbound-bit. 4.739 mi., Slaughters-Sebree Rd., Proj. F 526(10), S.P. 117-89, Webster Co., $208,034***from Fuller-Davis Co., Covington, K., conc. 3.675 mi., relocation of L. & N. 27 through Burnside, Proj. S.P. 100-335, Pulaski Co., $394,213*** from R. E. Gaddie, Inc. & Waters Constr. Co., Bowling Green, macad. bit. surf. Class 1, 5.031 mi., Somerset-Russell Springs Rd., surf. approaches to Fishing Creek Bridge, Proj. S.P. 100-235, Pulaski Co., $151,867***from Hinkle Constr. Co., Paris, Bit. surf. Class 1, 9.167 mi., S.P. Group 211(9)(10), Lincoln and Rockcastle Counties, $84,762***from R. R. Dawson Bridge Co., Bloomfield, reconstr. traffic bound surf. 0.851 mi., Evelyn-Ross Creek-Leighton Rd., Proj. RS-165-1(6), Lee Co., $50,644***from Hart & Edwards, 1091 Manchester St., Lexington, traffic bound limestone 4.334 mi., Proj. RS 65-169 and RS 65-249, Lee Co., $69,370***from Stephens-Jeffrey Co., Tompkinsville, reconstr. and traffic bound limestone 11.279 mi., Browning Rd., Proj. RS-114-4(8), $78,989.

Louisiana—State Dpt. Hys., Baton Rouge, Apr. 5, C. conc. 3.904 mi., Amoretti Freeport Hy., State Rte. 51, S. P. 9.13.04.39, Plaquemines Parish, from W. R. Aldrich & Co., Box 1751, Baton Rouge, $172,250. CD 3/22.

Louisiana—State Hy. Dpt., Baton Rouge, Apr. 5, grav. base course and b. conc. 6.68 mi., Haynesville-East and West Hy., S.P. 83-07-03 and 83-08-05, Federal Aid Secondary Proj. S-111(1) and S-109-1, Claiborne Parish, from Carson-Middleton, Contractors, Bossier City, $238,435***soil cmt. base course, alternate, grav. base course, 3 applications, b. conc., Eros-Chenierre Hy., S.P. 158.01-04, Federal Aid Secondary Proj. S-61(11), Ouachita Parish, from Henry & Hall, Dubach, $185,316***aggregate type surf. 0.757 mi., St. Francisville Ferry Approach, S.P. 61-03-11, West Feliciana Parish, from Delta Equipment & Constr. Co., Inc., 2219 Plank Rd., Baton Rouge, $57,834. CD 3/13.

New Hampshire—State Hy. Dpt., Concord, Apr. 6, grading, drainage, road mix surf. 1.79 mi., in city of Claremont, N. H. Route 11, Proj. No. F 234-1(6), Sullivan Co., from W. H. Hinman, Inc., North Anson, Me., $211,790. CD 3/29.

New Jersey—State Hy. Dpt., Trenton, Apr. 6, paving 0.535 mi., Route 35, Sect. 40C, from School House Rd. to Riverview Dr., in Brielle Boro, Fed. Proj. U-59-1(3), Monmouth Co., from Reid Contg. Co., Woodbridge, $512,094. CD 3/17.

▲ **Ohio**—State Hy. Dpt., Columbus, North extn. of Willow Freeway from Dalton to Bridge Ave., Cuyahoga Co., to Ambardo Bros. Constr. Co., 3600 Ridge Rd., Cleveland, $1,220,343. Est. $1,272,000. Bids 3/28, awarded 4/6. CD 4/6, under LB.

CONTRACTS AWARDED

Calif., Sausalito—George Kappas, 1651 Market St., San Francisco, grading Marin & Rodeo Ave. hill, to Brown-Ely Co., 360 Schmidt Lane, El Cerrito, $123,165. J. C. Oakley, 115 5 Ave., San Rafael, engr.

Colo., Denver—City and Denver Co., City-County, Bids: Lincoln Street width improv. district, width Lincoln St. from north curb line of Speer Blvd. to south curb line of 1st Ave. and from north curb line of Colfax Ave. to south curb line of 20 Ave., to Fairview Constr. Co., W. 9 Ave. and Wyandot St., $144,261. Bids 3/29, awarded 4/3. CD 3/24.

Tex., Anson—City, street paving, improv., own forces. Approx. $50,000. French Eng. Co., Abilene, engr.

Tex., Jasper—Jasper Co., Courthouse, 15 mi. farm-to-market road, own forces. Approx. $70,000. CD 7/19.

Tex., Laredo—Webb Co., Courthouse, farm-to-market road constr., force account. Approx. $75,000. CD 1/13.

Tex., San Antonio—Pierce & Cline, Taylor, street constr. and paving, to Owens & Stewart, Jourdanton. Approx. $65,000. CD 3/30.

EARTHWORK, WATERWAYS

BIDS ASKED

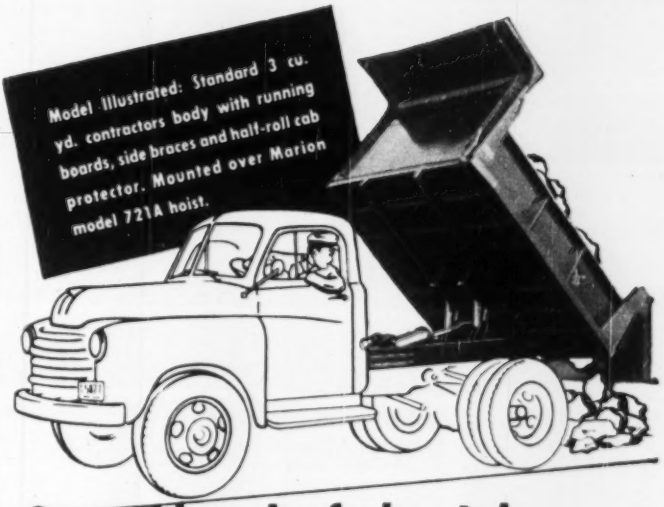
† **Arkansas**—B. 2, 4/26—U. S. Eng., P. O. Box 97, Memphis, 1, 1 mi., placing approx. 210,000 cu. yd. earthwork, new levee, sodding, fertilizing and seeding stations 7+46 to 9+23, 11+22-14+5, Levee Item No. R-2199, SFR, Carryville, St. Francis Drainage Dist., Clay and Greene Counties, Serial No. CIVENG-40-041-50-135. CD 6/9/43.

† **Illinois**—B. A. 4/26—U. S. Eng., 520 Merchandise Mart, Chicago, Zone 54, stone placement for breakwater repair at Waukegan, Chicago Calumet and Michigan City Harbors, Lake Michigan, Inv. No. CIVENG-11-032-50-34. CD 6/9/44.

† **Idaho**—B. A. 5/4—Bureau Reclamation, Dpt. Interior, Lewiston, constructing Clearwater Reservoir, Lewiston Orchards Proj., approx. 6 mi. southeast of Lewiston, Spec. 2967, Michael W. Straus, comr., adv. ENR 4/20. CD 9/12/44.

Iowa—B. A. On Or About 5/5—U. S. Eng., 1709 Jackson St., Omaha 2, Nebr., underseepage control facilities for Agricultural Levee Units L-624-1 627 in vicinity of Council Bluffs along left bank of Missouri River in Pottawattamie Co., CIVENG-25-066-50-167.

† **Colorado**—B. A. 5/8—U. S. Eng., P. O. Box 1538, Albuquerque, N. M., Willow Creek Channel Improv.,


Model illustrated: Standard 3 cu. yd. contractors body with running boards, side braces and half-roll cab protector. Mounted over Marion model 721A hoist.

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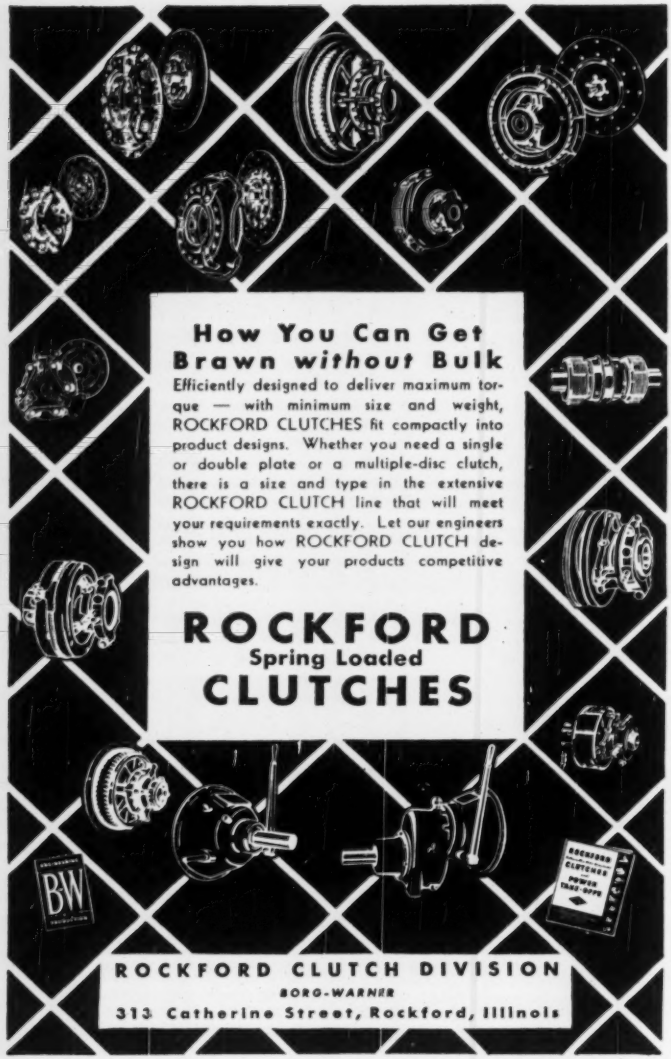
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Scranton, Pa. Dept. E, U. S. A.

Station 29 plus 35 to Station 55 plus 83, Creede, Serial No. CIVENG-39-005-50-11. Extended date, CD 3/2.

† South Dakota—B. A. 5/25—U. S. Eng., 1709 Jackson St., Omaha, Neb., earthwork, Stage I, for Oahe Reservoir Proj., on right bank of Missouri River, approx. 6 mi. northwest of Pierre, Serial No. CIVENG 25-066-50-158.

LOW BIDDERS

Tex., Port Arthur—City, Mar. 30, bulkhead repairs, reconstruction and expans., incl. bulkhead repairs at city slip, near Eddington Offset and near Lakeview Pump Station, from Tellepsen Constr. Co., 1710 Telephone Rd. Houston, $113,777. Est. $50,000. Robert J. Cummins, 1028 Bankers Mortgage Bldg., Houston, engr.

CONTRACTS AWARDED

† Georgia and South Carolina—U. S. Eng., Post Office Bldg., Savannah, Ga., clearing six parcels of land in reservoir area of Clark's Hill Dam, 1, to E. H. Hines Constr. Co., Greenwood, S. C., $669,370.[sic]; 2, to Lindsey Constr. Co., Lenox, Ga., $64,239; 3, to K. W. B. Constr. Co., Sherman, Tex., $167,940. Grand total $901,549. Bids 3/29. CD 3/8.

† Maryland—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., spillway and outlets, miscellaneous work, Savage River Dam Reservoir Proj., located on Savage River, Garrett Co., 26 mi. S. W. of Cumberland, and 4½ mi. upstream of Bloomington, CIVENG 49-080-50-62, to Lewis & Bowman, Box 743, Goldsboro, N. C., $76,357. Bids 3/16, awarded 3/28. CD 3/23.

Tex., San Antonio—Pierce & Cline, Taylor, earthwork, open drainage, grading, to Owens & Stewart, Jordantown, $36,500. CD 3/30.

AIRPORTS

LOW BIDDERS

Ill., Danville—AIRPORT RUNWAY—Vermilion Co. Airport Auth., Springfield, Apr. 5, concrete paving for airport runway, grading, drainage paving connecting taxiways, concrete apron expansion entrance road to t-l on auto and hangar parking areas, underground cable ducts, from McCalman Co., Inc., 619 Section St., Danville, $299,575.

Ill., Mattoon and Charleston—RUNWAY, etc.—Coles Co. Airport Auth., Springfield, grading, drainage, bit. runway, apron taxiway, entrance road and parking area for new airport, from Green Constr. Co., Oaklawn, $205,851.

CONTRACTS AWARDED

† Puerto Rico—RAW WATER RESERVOIR—U. S. Eng., Box 5043, Aucon, Canal Zone, concrete lining 12 m.g. raw water reservoir at Ramey Air Force Base, Eng. 96-505-50-24, to White & McColl, Inc., 75 West St., New York, N. Y., $89,551. Bids 2/15, awarded 2/20. CD 2/2.

PUBLIC BUILDINGS

BIDS ASKED

Minn., Wheaton—GENERATING PLANT—B.A. 4/25—Village, B. Eyster, clk., municipal power plant and distr. sys., incl. bldg., diesel engine-generator units, auxiliary equip., distr. sys., power wiring, switchgear, $450,000. Plans deposit $25, R. D. Thomas & Assoc., 400 Metropolitan Life Bldg., Minneapolis, engrs. CD 12/19.

Que., Brownsburg—SCHOOL—B.A. 4/25—G. Scudamore, c/o Protestant School Comm., Brownsburg, school, $350,000. Plans deposit $150. G. D. Thomson, 141 Guy St., Montreal, archt.

La., Baton Rouge—SCHOOLS—B.A. 4/26—East Baton Rouge Parish School Bd., Old City Hall, Zachary Negro Junior High and Belfair Elementary Schools. Plans deposit $25 each, A. Hays Town, Masonic Bldg., archt.

Pa., Reading—BARRACKS—B.A. 4/26—General State Auth., 18 and Herr Sts., Harrisburg, barracks and examining field for Pennsylvania State Police, $170,000. Plans deposit $10. Paul U. Kcch, 920 Washington St., archt. A. F. Jones, c/o owner, ch. engr. CD 11/28.

† Colorado and Wyoming—SUBSTATIONS—B.A. 4/27—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Brush, Colo. and Casper, Wyo., fabricated structural steel for Beaver Creek substation, Colorado-Big Thompson Proj., and Alcova substation, Treasuretsion Div., Missouri River Basin Proj., Wyo. Spec. 2475, L. N. McClellan, ch. engr.

Kan., Beloit—DORMITORY—B.A. 4/27—State Bd. Regents, National Bank of Topeka Bldg., Topeka, dormitory and administration bldg., Industrial School, $400,000. C. L. Marshall, 2021 Clay St., Topeka, state archt. CD 4/5.

Mass., Concord—POWER PLANT—B.A. 4/27—Commonwealth of Mass., Dpt. Correction, State House, Boston, power plant P-P2 addns., improvs., Contr. 1, West Concord Reformatory, $90,000. Plans deposit $10. Charles T. Main, Inc., 80 Federal St., Boston, engr. CD 12/14/49.

Ga., Dawson—HOSPITAL—B.A. 4/28—Terrell County Hospital Auth., Dawson, hospital, Dennis & Dennis, Richard V. Richard, Assoc., 409 N. Jefferson St., Albany, archts. CD 4/16.

† N. M., Las Cruces—TECHNICAL OFFICE—B.A. 5/2—U. S. Eng., Box 1538, Albuquerque, 26,000 sq. ft. steel frame, masonry, technical office, laboratory and

(Continued on page 88)

The Most Flexible Black Top Paver on the market!

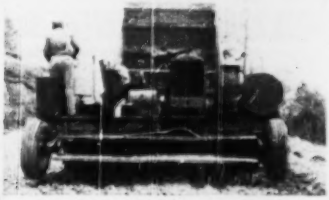
THE machine that is going to make possible the handling of the widest range of contracts is the one that is going to mean the most profit for you.

The flexibility of the Adnun Black Top Paver can't be equalled by any other piece of similar equipment. Your Adnun will lay any asphalt mix —hot or cold. It will spread stone, cinders or slag. It will lay soil cement. It has laid widths up to 13 ft. or it can spread narrow strips down to 6 ft.

In combination with the block-off sections of the hopper and the fine adjustment on the cutter bar, the Adnun will build out shoulders and "feather" the material into the existing crown without destroying the contour of the road.

This is a combination of advantages no other Black Top Paver can give you. They equip you to handle more work and a greater variety of work. Let our Sales Agent give you more details.

Look at this picture. Feathering a new shoulder into the crown. Adnun is the only machine that can do this.



Rubber Tired Stone Attachment makes a real stone spreader of the Adnun.

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Subsidiary of Blaw-Knox Co.

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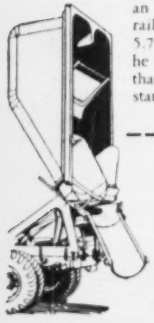
Dumpcretes gave Guy F. Atkinson a low-cost answer to a concrete hauling problem at the new 41-million-dollar Hyperion job.

He wanted to mix at a central plant, where he could produce *uniform* air entrained concrete. He found an ideal site—right on a railroad siding—but it was 5.7 miles from the pour. So he needed a hauling unit that would maintain a constant slump and air content on a haul this long. Dumpcretes were the answer.

Normal hauling time is 20 minutes. But the City of Los Angeles stamped "OK" on his top quality, Dumpcrete-hauled concrete, even after 45 minutes from plant to discharge.

Five Dumpcretes handle the entire production of the 2-yard plant. When pours are held up, they haul sand, so they "earn their pay" every day.

Mail coupon today for *new* booklet on Dumpcrete features — just off the press.



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Core Drilling by Contract

Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures. *Core Drill Contractors for more than 60 years.*

JOY MANUFACTURING CO.

Contract Core Drill Division • MICHIGAN CITY INDIANA

(Continued from page 86)

shop, concrete floor slabs and fdn., Serial No. Eng 29-005-50-44. $300,000. CD 4/6.

† Colo., Caddoa—OPERATORS QUARTERS—B. A. 5/9—U. S. Eng., P. O. Box 1538, Albuquerque, N. M., Operators Quarters Units 1 and 2, John Martin Reservoir Proj., Serial No. CIVENG-29-005-59-20. Extended date. CD 3/30.

† Md., Perry Point—LAUNDRY—B. A. 5/9—Veterans Admin., Munitions Bldg., Wash. 25, D. C., Laundry Bldg. 101 addn., Veterans Administration Hospital, Spec. 5049.

† N. M., Los Alamos—HOSPITAL—B. A. 5/9—U. S. Atomic Energy Comn., Los Alamos, 1 story, concrete block veterinary hospital, poured concrete fdn., $250,000.

† Mo., St. Louis—HOSPITAL—B. A. 6/13—Veterans Administration, Munitions Bldg., Wash. 25, D. C. Recreation Hall and Chapel Bldg. 2, Apartment Bldg. 3, Nurses Quarters Bldg. 4, Attendants Quarters Bldg. 5, Station Garage Bldg. 6, Laundry Bldg. 7, etc., Veterans Administration Hospital, Spec. 5025, CD 2/11/48.

LOW BIDDERS

Ala., Auburn—SHOP, etc.—Alabama Polytechnic Institute, Apr. 4, joint shop, warehouse and office, from A. Berney Jones, 409 Monroe St., Montgomery, $122,500. CD 3/24.

Colo., Golden—CHEMISTRY—Colorado School of Mines, Golden, Mar. 30, 3 story, 96x250 ft., brick, rein.-con. chemistry bldg., from Platte Rogers, Inc., 1530 W. 13 Ave., Denver, $559,689.

Mo., Columbia—CLASSROOM—Curators University of Missouri, Leslie Cowan, secy., Jesse Hall, Mar. 29, 4 story, 57x137 ft. and 20x32½ ft. brick, concrete, cut stone, steel, classroom bldg., University of Missouri campus between Education and Engineering Buildings, from Mitchell Constr. Co., 156½ Public Square, Springfield, $461,897. CD 3/13.

N. Y., Buffalo—LIBRARY—Bureau Contracts & Accounts, Albany, Apr. 5, Library Bldg., Bldg. 6 at New York State College for Teachers, from John W. Cowper Co. Inc., Sidway Bldg., $432,500. CD 3/21.

▲ Ore., Portland—STATE OFFICE—State Bd. Control, Salem, Apr. 6, 10 story state office bldg., 5 and Clay Sts., from Ralph & Horwitz, 1835 N. Flint St. $1,316,747. CD 3/28.

Pa., Huntingdon—MAINTENANCE BLDG.—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Apr. 5, general contract highway maintenance bldg. for State Hys. Dpt., from J. C. Orr & Son, 438 Seventh Ave., Altoona, $243,931. CD 3/15.

CONTRACTS AWARDED

N. Y., Deposit—HIGH SCHOOL—Bd. Educ., Central School Dist. 1, Deposit, Junior and Senior High School; to Rathgeb-Wash, Inc., 184 N. Main St., Portchester, $594,980. Bids 3/30. CD 2/17.

N. Y., New York—CREW QUARTERS—Bd. Transportation, 250 Hudson St., Zone 13, crew quarters at Union Square and Chambers Sts. Stations, Contr. Ltd. to Great Eastern-Victor Corp., 110 W. 40 St., Zone 18, $74,710. Bids 3/31.

O., Elyria—SCHOOL—Bd. Educ., Middle Ave., 2 story, bismt., brick, steel Ely School, Gulf and Ohio Sts. to Hume Siegfried Co., 855 Cleveland St., Amherst, $316,762. Est. $300,000. Outcalt, Guenther & Assoc., 13124 Shaker Square, Cleveland, archts. Silsbee & Smith, Turner Bldg., assoc. archts. CD 11/21.

Que., St. Hyacinthe—SCHOOL—School Comn., 1677 Girouard St., school, Laframboise St., to L. Vadnoceur 2330 St. Anne St., $358,673. S. A. Cyr, 4395 St. Andrew St., Montreal, archt.

COMMERCIAL BUILDINGS

BIDS ASKED

Wis., Milwaukee—SHOPPING CENTER—B. A. 4/27—Froedert Enterprises, Inc., 810 N. Plankington Ave., Zone 2, 1 and 2 story, 40x150 ft. and 310x150 ft., steel, brick, block, shopping center, concrete fdns. and floors, Grassold & Johnson, 734 N. Jefferson St., Zone 2, archts.

O., Cleveland—MONASTERY—B. A. 5/1—St. Benedicts Church, 2940 East Blvd., 4 story, bsmnt., brick, steel monastery, $600,000. Plans deposit $25. J. E. Potter, 1011 Swetland Bldg., archt.

▲ Ill., Effingham—HOSPITAL—Bids Asked—Effingham Civic Foundation, City Hall and Catholic Third Order of St. Francis, Sagaman Ave. Rd., Springfield, 6 story, rein.-con., brick, stone structural glazed tile base, St. Anthony's Memorial Hospital with 3 story nurses home, Approx. $2,500,000. Henry E. Slaby, 2750 N. Teutonia Ave., Milwaukee, Wis., archt. CD 4/14, under Public Bldgs.

Wis., Milwaukee—APARTMENT—Bids Asked—Royal Plaza Realty Co., 229 E. Wisconsin Ave., Zone 2, 9 story, 52x183 ft., 144 unit apartment, M. B. Coffman, 1220 N. Milwaukee St., Zone 2, engr. CD 1/3.

SOON LETS CONTRACT

Ala., Birmingham—OFFICE—Alabama Power Co., 600 N. 18 St., soon lets contract 12 story office bldg. addn. Bid date changed. Jack Smith, Frank Nelson Bldg., archt. CD 3/31.

Wash., Seattle—CHURCH—First Methodist Church, 5 Ave. and Marion St., Zone 4, soon lets contract rein.-con. church addn., $300,000. John Graham & Co., Dexter Horton Bldg., Zone 4, archts. CD 9/15.

CONTRACTS AWARDED

Calif., Hayward—RESIDENCES—Eveleth & Sundberg, 24647 Western Rd., forty-seven 6 room residences in Tract 973, Joyce St., Mardie and Janne Sts., Owner builds, $305,000.

▲ Calif., Los Angeles—DWELLINGS—Panorama Community Homes, 5555 W. Manchester Blvd., 244 frame, stucco dwellings, Burton, Ranchito and Lanark Sts., Redbush Lane, Broadleaf, Cherry Stone, and Cintalcoupe Aves., to Kaiser Community Homes, 5555 W. Manchester Blvd. Approx. $1,487,200.

Calif., Santa Ana—DWELLINGS—De Armond & Auck, 3021 Rowena Ave., Los Angeles, 59 frame, stucco dwellings in Tract 1147. Owner builds. $383,500.

Conn., Manchester—HOUSES—Greertul Homes, Inc., 923 Main St., 25 frame houses, Maizer St. Owner builds. $275,000. CD 3/30.

Conn., Manchester—HOUSING—Alexander Jarvis, 6 Dover St., 50 single homes, Wedgewood and Englewood Drives, to Jarvis Constr. Co., 6 Dover St. $450,000.

Conn., Ridgefield—HOUSING—Laurence M. Samuel, Main St., housing development on 22 acre Rundle Farm, Ridgebury Sect. Owner builds. Approx. $250,000. CD 3/10.

Ia., Pella—DORMITORY—Central College, Pella, general contract men's dormitory, to Garner & Stiles Co., 519-14 St., Des Moines. Approx. $300,000. Brooks, Borg, Hubbell Bldg., Des Moines, archts. Bids 3/16.

O., North Olmsted—HOMES—Louis W. Miller, 5961 Louis Dr., thirty-five 1 story, brick, frame homes, Clague and Mastic Rds., separate contracts. $350,000.

O., Parma—HOMES—Fodor Realty Co., 3524 Lorain St., Cleveland, twenty-four 1½ story, brick, frame homes, Thornton, Wilmington and Dorothy Aves., separate contracts. $250,000.

Pa., Sharon—APARTMENT—632 E. State St. Corp., c/o general contractor, 6 story, 40x120 ft., brick, block apartment to Valley Homes Co., Inc., Sharpsville. Approx. $500,000. Phillip Friedman, 121 S. Negley St., Pittsburgh, archt.

Pa., Washington—APARTMENTS—Hardy & Rankin, Canonsburg, five 2 story, 52x134 ft., cornet, brick veneer apartment. Owner builds. Approx. $500,000. Phillip Friedman, 121 S. Negley St., Pittsburgh, archt.

Tex., Lubbock—APARTMENT—Carl Hensley & Assoc., 3304 24 St., 65 apartment units. Owner builds. Approx. $475,000. CD 3/30.

Que., Montreal—HOUSING—Kolf Realties, Inc., 6910 Wiseman Ave., Outremont, Roads, Montcalm Ave. to Ain & Zaida Ltd., 6910 Wiseman Ave., Outremont. Approx. $750,000. G. Shubin, 1415 St. Mark St., archt.

Que., Montreal—APARTMENTS—Walkley Realties Corp., 1200 St. Alexander St., 120 unit concrete, brick apartments to L. Doroldo, Inc., 6320 St. Lawrence St. $250,000. M. M. Kalman, 1200 St. Alexander St., archts.

INDUSTRIAL BUILDINGS

BIDS ASKED

O., Cincinnati—FACTORY—Bids Asked—The Carlisle & Finch Co., 218 E. Clifton St., 1 story, basmt., concrete block, steel factory. $70,000.

O., Cincinnati—GARAGE, etc.—Bids Asked—E. J. Miller & Assoc., engrs., 315 E. Central Parkway, concrete block, steel garage, loading area, repair shops for Kilwitter Trucking Co., Joseph F. Kilwitter, owner), 1000 W. 9 St. CD 4/3.

SOON LETS CONTRACT

O., Cincinnati—WAREHOUSE, etc.—Goodyear Tire & Rubber Co., 1144 Market St., Akron, soon lets contract 1 story approx. 40,000 sq. ft. brick, concrete block, concrete, steel warehouse and office, railroad siding and loading area.

O., Lockland—FACTORY—Gardner Richardson Board & Carton Co., E. Seay, vice pres., 407 Charles St., Middletown, soon lets contract 2 story, basmt., 14x169 ft., brick, steel machine room, locker room and cafeteria, concrete tile. Carl H. Martin, 1st Natl. Bank Bldg., Middletown, archt. CD 4/3.

O., Norwood (Br. Cincinnati)—PLANT—General Motors Corp., (Chevrolet Div.), 1840 Holbrook St., Detroit, Mich., soon lets contract approx. 10,560 sq. ft. brick, structural steel car conditioning plant, mtg. and loading area. Mehls & Fairbrothers, Inc., 345 New Center Bldg., Detroit, Mich., archt. CD 4/3.

Tex., Amarillo—WAREHOUSE—G. B. Realty Co., Inc., 1606 Young St., Dallas, soon lets contract warehouse, $70,000. George W. Edwards, 2509A Cochran St., Dallas, archt.

Ont., Long Branch—WAREHOUSE—A. G. Facey archt., 991 Bay St., Toronto, soon lets contract 1 story, 90x270 ft., steel, brick warehouse and office, for C. C. Wakefield & Co., Ltd., 67 Yonge St., Toronto. Approx. $200,000. E. A. Cross, 992 Bay St., Toronto, engr. CD 3/17.

CONTRACTS AWARDED

Conn., Bridgeport—FACTORY—Singer Co., 803 E. Washington St., 3 story, brick, concrete factory, Pembroke St., to Austin Co., 19 Rector St., New York, N. Y. $400,000. CD 4/7.

Ga., Calhoun—WEAVE ROOM—Echota Cotton Mills, Calhoun, addn. loom space, 56 by 8 ft. Hardin Co., Zahner Bldg., Atlanta. Approx. $75,000. Bids 3/29. CD 3/4.

Ind., Indianapolis—GARAGE, etc.—Maryland St. garage Corp., Klein & Kuhn, agents, Guaranty Bldg., Illinois and Maryland Sts., 6 story, basmt., L-shaped 127x154 ft., 575 car capacity store and off the street parking garage to A. V. Stackhouse Co., 2611 Winthrop Ave. $300,000, awarded 3/31. John Sonn, 619 Ind. Trust Bldg., archt.

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● In a recent survey, one customer gave "Good service on special sizes" as his reason for ordering his steel from United States Steel Supply Company. And his words summed up the statements of many of our customers. Whenever your problems involve steel in special sizes, forms or specifications, call United States Steel Supply Company. We'll do our best to live up to our customers' high opinion of our service.

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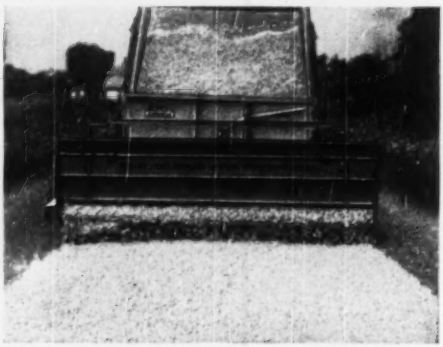

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CLECO RC-80 AIR-OPERATED PAVING BREAKERS

HERE'S WHAT CONTRACTORS SAY:

"... these breakers are the finest we have ever used."

"... greater output per man-hour."

"... eliminates four o'clock fatigue."

"... less maintenance than any other busters we've ever had."

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CLECO DIVISION

of the REED ROLLER BIT COMPANY

5125 Clinton Drive — Houston 20, Texas

Ind., Indianapolis—BAKERY—Roselyn Bakery, Jno. S. Clark, State & Prospect Sts., 2 story, bsmnt., irregular shaped brick, rein.-con. structural steel Bakery, E. 30 St. and Takoma Ave., to George Bahre Constr. Co., 1310 Southeastern Ave., $250,000, awarded 4/2. Gurans & Moore, 830 Ind. Pythian Bldg., archt.

Ore., North Bend—SAWMILL—Weyerhaeuser Timber Co., North Bend, saw mill, force account. $900,000 CD 1/17.

Pa., Pittsburgh—BOTTLING HOUSE—Pittsburgh Brewing Co., 3340 Liberty Ave., 4 story 100x180 ft., brick bottling house alterations addns., to the Trimble Co. 1719 Pennsylvania Ave., N. S. Pittsburgh. Approx. $200,000. R. J. Brocker, 201 Coulter Bldg., Greensburg, archt.

Tenn., Chattanooga—TRUCK TERMINAL—Mason & Dixon Lines, Inc., c/o contractor, truck terminal, to T. U. Parks Contg. Co., 1700 Kirby Ave. $78,786. Bids 3/31. CD 3/31.

Ont., Sarnia—WAREHOUSE—Polymer Corp. Ltd., No. 40 Highway, 1 story 103x215 ft., brick, concrete storage warehouse, to Curran & Herridge Constr. Co., Ltd., 283 Confederation St., Approx. $175,000. Bids 3/20. CD 3/3.

Ont., Toronto—GARAGE, etc.—Toronto Electric Comrs., 14 Carlton St., garage addns., alterations, 25-39 Wellesley St., incl. low pressure steam heating sys., to Dickie Constr. Co., Ltd., 17 Yorkville Ave., Approx. $250,000. Bids 3/14. CD 3/2.

Que., Montreal—WAREHOUSE—Kruger Paper Co., Ltd., 941 Inspector St., 1 story, 180x290 ft., rein.-con. brick warehouse, Bedford Rd., to Main constr. Co., Reg'd. 4534 City Hall Ave., $310,000. Bids 1/9 CD 12/29.

UNCLASSIFIED

BIDS ASKED

† Ga., Macon—MUSEUM, etc.—B.A. After 4/20—National Park Service, Dpt. Interior, Region 1, Richmond, Va., museum and administration bldg., repairs, addns., etc., National Monument.

Tex., Cleveland—SWIMMING POOL, etc.—B. A. 4/28—City, swimming pool and bathhouse. $60,000. Plans deposit $20. Garrett Eng. Co., 5008 Almeda Rd., Houston, engr.

Calif., Los Angeles—SWIMMING POOL, etc.—B.A. 5/4—City Bd. Recreation & Parks, City Hall, 60x120 ft. swimming pool, gymnasium and playground alterations at Lincoln Park. $172,500. Arthur Wolfe, 1722 S. Lafayette Park Pl., archt.

† Wyoming—TRANSFORMERS—B.A. 5/9—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. at Bonneville, current transformers for Boysen switchyard, Boysen Div., Boysen Unit, Missouri River Basin Proj., Spec. 2974. L. N. McClellan, ch. engr.

SOON LETS CONTRACT

Ont., Point Edward—FREIGHT PLATFORMS—E. R. Logie, engr., Room 436, Union Station, Toronto, soon lets contract 25x116 ft., concrete freight platforms with structural steel canopies, for Canadian National Rys., 360 McGill St., Montreal Que. Plans deposit $50. CD 5/4/49.

LOW BIDDERS

Ind., Muncie—STADIUM—City, football stadium, Ball Field, from A. J. Glaser Co., Muncie, $126,214. Est. $150,000.

† N. M., Las Cruces—ELECTRICAL DISTRIBUTION, etc.—U. S. Eng., P. O. Box 1538, Albuquerque. Mar. 28. Lot 1, electrical distr. sys.; Lot 2, sanitary sewers, gas, water; Lot 3, road paving, earthwork, Serial Eng. 29-005-50-34, from P. R. Burns, Las Cruces. $115,991. (Correction—Low Bidder.) CD 4/3, under I.B.

N. Y., Great Kills—GAS MAINS, etc.—Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Zone 21, installing gas service main and duct lines for electric light and power, telephone, police and fire alarm services in Great Kills Park, east of Hylan Blvd. between Fairlawn and Emmet Aves., Richmond Boro. Contr. # 16-150, Frary-Zambre Constr. Co., Emery Court, Springville. $71,995. CD 3/27.

N. Y., Rockaway Beach—PARKING FIELDS—Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Apr. 4, 3 parking fields at Beach 59 St., Beach 62 St. and Beach 68 St. and tool booths at 4 parking fields at Beach 32, Beach 52, Beach 64 and Beach 69 Sts., along the boardwalk, etc. Contr. Q-162-150, from MacAsphalt Constr. Corp., 33-15 Lawrence St., Flushing. $143,708. CD 3/27.

CONTRACTS AWARDED

† D. C., Wash.—AMPHITHEATER—National Capitol Parks, Dpt. Interior, Interior Bldg., 18 and C Sts., N.W., construction Sesquicentennial amphitheater and misc. structures in Rock Creek Park, to Jay Cee Constr. Co., 2119 Good Hope Rd., S. E., $240,017. Bids 2/28, awarded 4/3. CD 3/3, under I.B.

Miss., Ripley—NATURAL GAS SYSTEM—City, City Hall, natural gas sys., transmission line, to Lehman, Hoge & Scott, Florence, Ala., $50,116; distr. sys., to Sullivan, Long & Hagerty, Bessemer, Ala., $76,620; furnishing materials to Natural Gas Supply Co., Moultrie, Ga., $160,184. Grand total $286,920. Bids 3/31. CD 3/16.

Mo., Clayton (St. Louis P. O.)—PARKING LOT—City, c/o City Clerk, parking lot development, incl. grading, sanitary and storm sewers, paving, stairways, etc., to Samuel Kraus Co., 649 Edmund Ave., St.

Louis, $53,336. Bids 3/28. John Noyes Railway Exchange Bldg., 611 Olive St., St. Louis, Zone 1, engr. CD 8/14/44.

Tex., Henderson—TRANSMISSION LINE—Southwestern Gas & Electric Co. Longview, 41½ mi. 66,000 volt electric loop line through Henderson, own forces. Approx. $125,000. CD 3/2.

Alta., Lethbridge—RINKS—Municipality, skating and curling rinks to Oland Constr. Ltd., 1307 Third Ave., $142,600. Meach & Assocs., 208 McFarland Bldg., archts.

PROPOSED PROJECTS

WATER SUPPLY

† Nev., Hawthorne—Pub. Wks. Office, 12th Naval Dist., Federal Office Bldg., San Francisco, Calif., water supply storage facilities addn. at Naval Ammunition Depot, NOY 20627. $200,000.

Tex., Grand Prairie—City, Carlyle Smith, mayor, Grand Prairie, reservoir water supply dam on Cottonwood Creek, 40 ft. high, rein.-con., steel, earth constr., $500,000.

▲ Tex., Lubbock—City, W. H. Rodgers, mayor, Lubbock, water lines, sys. rehabilitation, $900,000 water supply and storage, $550,000. G. K. Harris, city engr.

SEWERS, WASTE DISPOSAL

Calif., Los Angeles—Bd. P. Wks., City Hall, sanitary sewers Jessica Dr. and Oneonta Dr. Sewer Dist., $56,-153; Arminta St. and Wilbur Ave. Sewer Dist., $216,-131. Lloyd Aldrich, city engr.

▲ Ill., Decatur—Decatur Sanitary Dist., Decatur, 2 interceptors, sewer mains exten. to serve new metropolitan areas, $3,000,000. Alex. van Praag Jr., Decatur, consult. engr. CD 4/28/44.

▲ Ill., Wood River—City, City Clk., City Hall, sanitary and storm water sewerage sys. exten. improvs., $1,300,000. CD 12/19/45.

▲ Ky., Louisville—Metropolitan Sewer Distr., W. Jefferson Ct., sewer in Main St. from Hancock to 4 sts., part tunnel and part pipe, built in connection with flood wall section from 5 to Washington Sts., $1,-200,000. CD 4/22/48.

N. Y., Port Washington—North Hempstead Town Bd., Town Hall, Manhasset, sewage treatment and disposal plant, Harbor Rd. $965,000.

N. C., Henderson—City, voted bonds, sewer exten. $250,-000. CD 2/15.

O., Cleveland—Comrs., Cuyahoga Co., Courthouse, sewage treatment and disposal works, $500,000. Ohio Supreme Court declared bonds voted November 1944, illegal because proceeding for submission of these bonds began before the Ohio State Legislature reduced requirement from 65% to 55% majority. CD 11/21.

Tex., Dallas—City, City Hall, Main and Harwood Sts., sanitary sewer line, serving Cockrell Hill Twp., $225,000. J. T. Conroy, city engr. CD 12/1/48.

▲ Tex., Lubbock—City, W. H. Rodgers, mayor, Lubbock, sewage disposal plant, $500,000; sanitary sewer lines and sys. rehabilitation, $1,400,000. G. K. Harris, city sewer engr.

Tex., Plano—City, sanitary sewers, $100,000.

▲ Tex., Port Arthur—City, city-wide drainage proj., $1,400,000. Charles P. Smith Assoc., P. O. Box 966, and George J. Schaumburg, American Natl. Bank Bldg., Beaumont, engrs.; Correction engineers, CD 2/23.

Alta., Edmonton—Municipality, incinerator at east end of Highland golf course, new incinerator in Forest Heights, $130,000. J. D. A. MacDonald, City Hall, engr. CD 11/8/43.

Ont., Toronto—Municipality, City Hall, interceptor sewer in Nursewood Rd., $760,000 voted; storm sewer in Circle Parkway, $245,000 voted. Murray Stewart, City Hall, city engr. CD 8/10/44.

BRIDGES

▲ Connecticut—State, G. Albert Hill, hy. comr., Hartford.

Hartford and East Hartford—bridge over Connecticut River, State St., Hartford, to Pitkin St., East Hartford, also Riverfront Blvd., ramps, expressway connections and underpass covering 50 acres of land being cut with Wilbur Cross Parkway and Glastonbury Expressway, $15,000,000. Edward E. Jorgensen, ch. engr.

Connecticut—State, G. Albert Hill, Hy. comr., Hartford.

Georgetown—grade separation and approaches between Rt. 7 and Rt. 53, $275,000. Edward Jorgensen, ch. engr.

▲ Ohio—State Hy. Dept., Columbus.

Cuyahoga Co.—Inner Belt Bridge, will run west from E. 22 St. and Cedar Ave., replacing Central Viaduct to W. 14 St. and Abbey Rd. $30,000,000.

STREETS AND ROADS

Connecticut—State, G. Albert Hill, hy. comr., Hartford.

Norwich—waterfront highway and 2 highway bridges, $935,000. Roy E. Jorgensen, State Office Bldg., Hartford, ch. engr.

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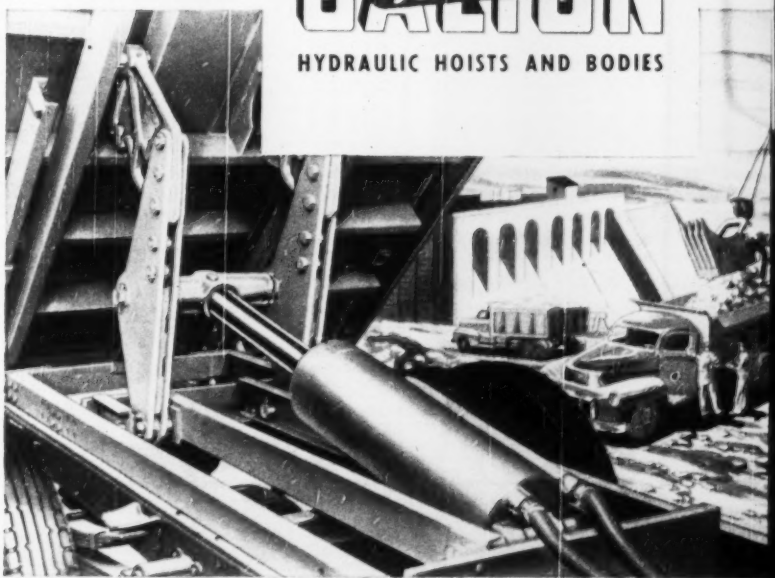

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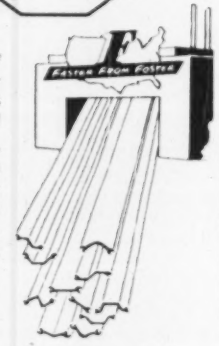

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New York—New York State Thruway Auth., Albany, survey and study of traffic revenues, economic advantages and construction costs, for planning, construction and financing of New York State Thruway System. Madigan & Hyland, 28-04, 41 Ave., Long Island City, consult. engrs.

▲ Ohio—State Hy. Dpt., Columbus.
Cuyahoga Co.—North exten. of Willow Freeway, from Dalton to Bridge Aves. $3,000,000.
Lake Freeway, Gordon Pare, $3,000,000.
Medina Freeway, part of U. S. Route 42, C. C. C. Hy., Medina Freeway will turn south from W. 14 St. and Abbey Rd. will follow near Jennings Rd. and W. 11 St. then along Brookpark Rd. to the Cleveland Airport, $37,000,000. A. Endress, c/o owner, engr.
▲ O., Cleveland—City, City Hall, Lakeside and 6 Sts., street opening, $3,500,000. Ohio Supreme Court declared bonds voted November 1949 illegal because proceeding for submission of these bonds began before the Ohio State Legislature reduced requirement from 65% to 55% majority. CD 11/22.
▲ Tex., Conroe—Montgomery Co., R. H. Weatherly, judge, Conroe, bond election Apr. 29, road construction, imprvs., paving, Precinct 1, $1,248,749; 13½ mi. Precinct 2, $2,138,000; lateral roads and bridge constr. Precinct 3, $1,498,976; some streets in town of Montgomery. $1,265,782. CD 2/23/49.
▲ Tex., Port Arthur—City, paving streets. $8,000,000. Charles P. Smith Assoc., P. O. Box 916, and George J. Schamburg, American Natl. Bank Bldg., Beaumont, engrs. Correction (engineer). CD 2/23.
▲ Wash., Tacoma—Pierce Co., Courthouse, 10 year program, incl. asph. 10 mi. Waller Rd. Pioneer way to Frederickson, $390,000; imprv. 3.7 mi. Hales Passage-Narrows Bridge Rd., Primary State Hy. 14 in Warren, $285,000; exten. Primary State Hy. 5 from Hart's Lake to Tanaka, 5.7 mi., $141,000; imprv. 8 mi. Kapowsin Hy., Primary State Hy. 5 to Electron, $170,000; imprv. 7 mi. Muck-Kapowsin Rd., Primary State Hy. 5 to Thrits, $150,000; wid'n., surf. 3.5 mi. Rosedale-Gig Harbor Rd., $100,000; imprv. Puyallup-Alder Rd., Secondary State Hy. 5-G to Primary Hy. 5, 1.9 mi., $380,000; surf. 4 mi. Gig Harbor Longbranch Rd., Key Center to Longbranch, $180,300; imprv. E. 72 St., Tacoma, Mckinley Ave. to Pioneer Way, 4 mi., $190,000; imprv. Caldwell-Mickelson Rd., Milton Ave. to Sumner-Edgewood Rd., 3.4 mi., $105,000; grading, surf. 3.8 mi. Gravelly Lake Dr., State Historical Rd. 1.1 to Primary State Hy. 1, $192,000; imprv. 1.6 mi. Stewart Rd., Valley Ave. to Primary State Hy. 5, $126,167; imprv. 6.5 mi. Malcolm-McLarty Rd., Pioneer Way to Widerhold-Heatly Rd., $203,376; reconstr. 9 mi. Orting-Southern Rd., Orting to Kapowsin Hy., $180,000; surf. 13.6 mi. Hart's Lake loop, Secondary State Hy. 5-H to Hart's Lake, $219,500; surf. and wid'n. 5.5 mi. Rosedale-Purdy Rd., $150,000; constr. 17.2 mi. Crescent Valley Rd., Gig Harbor to Kitsap Co. line, $130,000; imprv. 7.2 mi. Bridgeport way, S. 19 St. to Primary State Hy. 1, $228,000. W. A. Stander, co. engr.

AIRPORTS

Ia., Cedar Rapids—AIRPORT IMPRVS—City, City Hall, airport imprvs. $600,000. P. W. Roberts, C. A. A. Dist. engr., 2220 40 St. Place, Des Moines, consult. engr.
† N. Y., Purchase—ADMINISTRATION BLDG.—U. S. Eng., First and Douglas Sts. N. W. Wash. 25, D. C., administration bldg. for 52nd Fighter Wing of Air National Guard on five-acre site on Westchester County Airport. $500,000.
▲ O., Cleveland—AIRPORTS—City, City Hall, Lakeside and 6 Sts., airports. $5,500,000. Ohio Supreme Court declared bonds voted November 1949, illegal because proceeding for submission of these bonds began before the Ohio State Legislature reduced requirement from 65% to 55% majority. CD 11/22.

LATIN AMERICA

Mexico, Ixtapalapa—DC, Palacio Municipal, Mexico, D. F., plans women's prison. $300,000.

PUBLIC BUILDINGS

▲ Ala., Huntsville—HOUSING—Huntsville Housing Auth., c/o Paul W. Hofferbert, Bright, Gadsden, 350 housing units. Approx. $1,000,000. CD 11/22.
▲ Ala., Mobile—HOUSING—Mobile Housing Auth., c/o Harry Inge Johnstone, Annex First National Bank Bldg., 700 housing units. Approx. $4,000,000. CD 1/23.
▲ Ala., Prichard—HOUSING—Prichard Housing Auth., c/o Mayor G. W. Dunnaway, Prichard, 300 housing units. Approx. $1,000,000.
▲ Calif., Bakersfield—SCHOOL FACILITIES—City School Dist., voted $1,965,000 bonds, school facilities. CD 3/2.
Calif., Fair Oaks—SCHOOL—San Juan High School Dist., Fair Oaks, voted $272,000 bonds high school addn. CD 11/22.
Calif., Monterey—SCHOOL—Monterey Elementary and Union High School Dist., Box 1031, Monterey, plans by Robert Stanton and Chester R. Phillips, Box 2177, Carmel, 19 room school in Seaside. $389,000. CD 5/16/47.
▲ Calif., Pittsburg—SCHOOLS, etc.—Pittsburg City School Dist., Pittsburg, $1,250,000 bond election June 6, $421,345, school and high school addns., $459,050.

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(Continued from page 92)

▲ Calif., Redondo Beach—SCHOOL FACILITIES—South Bay Union High School Dist., voted $1,490,000 bonds, school facilities. CD 3/24.

▲ Calif., Santa Monica—ADMINISTRATION, etc.—City Bd. Educ., 2333 Sixth St., plans by Marsh, Smith, & Powell, 208 W. 8 St., Los Angeles, Junior College bldgs., incl. 50 x 130 ft. reinf.-con. administration bldg.; 1 story, 12,000 sq. ft. reinf.-con. library; 2 story, 62 x 289 ft. reinf.-con. classroom unit; 1 story, 13,000 sq. ft. reinf.-con. student activities; two 1 story art unit, music unit, speech unit. $1,025,000. CD 5/8/46.

▲ Calif., Whittier—SCHOOL—Whittier Union High School Dist., Whittier. $2,500,000 bond election April 28; school facilities. CD 4/25/46.

Conn., Warehouse Point—SCHOOL—Town of East Windsor Bd. Selectmen Town Hall, East Windsor, plans by Carl Mainfesté Assocs., 36 Pearl St., Hartford, brick, steel Warehouse Point School. $500,000. CD 8/17.

Ga., Dublin—HOUSING—Dublin Housing Auth., c/o Abrs & Robeson, archts., 22 Marietta St. Bldg., Atlanta. 100 housing units. Approx. $500,000.

▲† Idaho, Arco—POWER FACILITIES—Atomic Energy Comn., 1901 Constitution Ave. N. W., Wash., D. C., permanent power facilities for Reactor Testing Station. Approx. $1,000,000. Gibbs & Hill, Inc., 510 W. 6 St., Los Angeles, Calif., consult. engr. A. Johnson, P. O. Box 122, Idaho Falls, chf. engr., constr. div. CD 12/16.

Ill., Shelbyville—HOSPITAL—Shelby County Memorial Hospital, Shelbyville, plans by S. A. Clausen, Decatur, 48 bed hospital. $300,000.

Ind., Southport—SCHOOL—Southport School System, plans Junior High School. $440,000.

▲ Ia., Des Moines—AUDITORIUM—City Memorial Auditorium Comn., City Hall, voted $2,500,000 bonds, Mar. 27, veterans memorial auditorium. $5,250,000. Des Moines Architects Comn., c/o Tinley, Higgins & Ligher, 526 Liberty Bldg., Des Moines, archts. CD 3/27.

▲ Ky., Louisville—SCHOOL—Bd. Educ., Jefferson Co., plans by Fred Hartstern, Realty Bldg., Zone 2, high school, south end of county. $1,500,000. E. R. Ronald & Assocs., 554 S. Third St., engr.

▲ La., Monroe—SCHOOL—Ouachita Parish, voted bonds Mar. 26, school improv. $5,200,000. CD 2/20.

Mass., Watertown—HOUSING—Town of Watertown Housing Auth., plans by E. Sears Reid & Assocs., 147 State St., Boston, 68 unit, 2 story frame veterans housing Proj. No. 200-2. Approx. $600,000.

Mass., Woburn—HOUSING—City of Woburn Housing Auth., Woburn, plans by Arthur G. Manasekian & Assoc., 30 Huntington Ave., Boston, 100 unit, garden apt. housing, State Aided Proj. $900,000. CD 3/9.

Minn., Excelsior—SCHOOL—Bd. Educ., Minnetonka School Dist. 7, W. O. Nelson, supt., $1,500,000 bond election Apr. 25, 2 story, 600 ft. long, Senior High School. Haxby, Bissell & Beaie, 1111 Nicollet Ave., Minneapolis, archts. CD 1/12.

Miss., Winona—HOSPITAL—City, City Hall, plans by E. E. Mallvaney, Millsaps Bldg., Jackson, hospital. $500,000.

Mo., Clayton (St. Louis 5, P. O.)—COURTHOUSE—St. Louis Co., c/o Luman F. Matthew, presiding judge, St. Louis Co. Court, and Leo Sweet, co. clk., refund $500,000 bonds Mar. 28; replacing center section courthouse with modern brick, steel, concrete structure; modernization of south wing. $500,000. CD 2/16.

Mo., Martinsburg—SCHOOL—Community School Dist. R-6, Audrain Co., Floyd Rutzel, pres., Frank Paxson, secy., plans by Duewig Abt, Moberly, brick, concrete consolidated high school, near junction of Hys. 54 and 19, about 4 mi. north of Martinsburg and 5 mi. south of Laddonia, to serve towns of Rush Hill and Bente City, etc. $250,000. CD 3/12, under Mo., Laddonia.

Neb., Lincoln—HIGH SCHOOL—Bd. Educ., Lincoln high school in southeast sect. 37, and High Sts. $500,000.

Neb., Omaha—SCHOOL—Bd. Educ., 1902 Davenport St., plans by John Latenser & Sons, 1307 Farnam St., first wing of Sellom School. $650,000. CD 11/15.

N. Y., Hempstead—TOWN HALL—Town Town Hall, 350 Front St., east wing addn. to Town Hall. $500,000.

O., Athens—STUDENT CENTER—Ohio University, John C. Baker, pres., Athens, preliminary sketches by Bellman, Gillett & Richards, 618 Jefferson St., Toledo, student center, incl. ballrooms, lounges, dining rooms, cafeteria, dormitory, recreational rooms, etc. $800,000.

O., Cincinnati—SCHOOL—Bd. Educ., 241 E. 9 St., plans by W. W. Carlton & Assoc., engrs. and archts., 241 E. 9 St., 2 story, burnt brick Coverdale school. $617,500. CD 11/17/48.

† O., Rossford—MILITARY INSTALLATION—Col. S. W. McIlwain, Cons. Officer at Rossford Ordnance Depot, U. S. Army, Rossford, convert Rossford Ordnance Depot into permanent military installation, incl. fourteen 280x60 ft. warehouses. $500,000; new administration bldg. $247,000.

O., Shawnee—SCHOOL—Bd. Educ., Shawnee Twp., Shawnee, $295,000 bond election May 2, school addn. $525,000. CD 11/19/48.

O., Wooster—HIGH SCHOOL—Bd. Educ. of North Central School Dist., Courthouse, plans by Spahn & Barnes, 1242+ Cedar Rd., Cleveland, $584,000 bond election May 2, North Central High School in Sterling, Creston and Portage Dists. $500,000.

O., Wooster—HIGH SCHOOL—North Central Local School Dist., c/o Ralph Ely, co. school supt., Wooster, $584,000 bond election May 2, high school.

Pa., Mars—SCHOOL Dist., Adams Twp., and State Pub. School Auth., Harrisburg, plans by R. J. McCandless,

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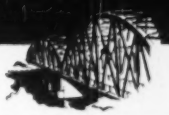

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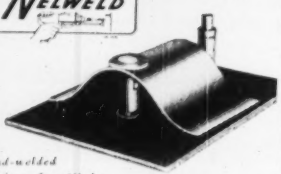

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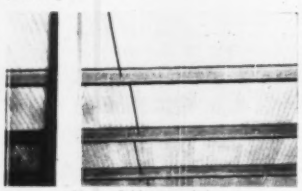

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239 4 St., Elwood City, 2 story, bsmnt., brick, tile, steel school, near here. $250,000.

Tenn., Knoxville—BUSINESS ADMINISTRATION—University of Tennessee, Knoxville, plans by Bealer & Wilhoit, Mercantile Bldg., business administration bldg. $400,000. CD 1/17/47.

Tenn., Nashville—HEATING PLANT—State of Tennessee, Nashville, plans by Hart & McBryde, Cotton States Bldg., central heating plant for state bldgs. $600,000.

Tenn., Tullahoma—SCHOOL—State of Tennessee, Nashville, plans by Hunt, Caton & Assoc., James Bldg., Chattanooga, Tennessee Vocational School for Girls. $250,000.

▲ Tex., Pampa—SCHOOLS—Pampa Independent School Dist., Pampa, votes bonds Junior High School, $450,000; Intermediary school, $275,000; 9 grade school, $275,000; gymnasium-stadium, $250,000. B. R. Cantrell & Co., Box 1638, archts. CD 3/30.

▲ Va., Richmond—SCHOOL—City, City Hall, plans by Marcellus Wright & Son, 1103 E. Main St., George Washington Carver School for Negroes. $1,081,000. CD 6/1/44.

Va., Richmond—SCHOOL—City, City Hall, plans by J. Binford Walford & O. Pendleton Wright, 103 E. Cary St., West End School in Westmoreland Ave. between Cary St. and Grove Ave. $875,000.

▲ Wash., Seattle—SCHOOLS—School Dist. 1, 815 4 Ave. N., plans by Mallis, DeHart & Hopkins, Lyon Bldg., Seattle, Zone 4, Southeast Junior High School, $2,000,000; Southwest Junior High School, $1,500,000. CD 8/12.

▲ Wash., Sunnyside—SCHOOL—School Bd., Sunnyside, plans by W. H. Rothe, Liberty Bldg., Yakima, Senior High School, $1,000,000.

▲ Alta., Namao—HOUSING, etc.—Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., 600 houses for Army personnel. Approx. $4,500,000; 400 houses for Air Force personnel. Approx. $4,000,000; construct army depot, incl. R. C. E. M. E. workshop, army service corps supply depot and ordnance depot. Approx. $8,000,000.

N. B., Atholville—SCHOOL—Bd. School Trustees, W. B. W. Guitan, chr., school. Approx. $350,000.

Ont., Toronto—SCHOOL—Bd. Educ., 155 College St., plans by C. E. C. Dyson, 55 College St., school addn., Fern Ave. $533,000 voted.

Ont., Toronto—SCHOOL—North York Twp., Collegiate Bd., 5145 Yonge St., Willowdale, plans by Allard & Gouinlock, 57 Bloor St. W., secondary school, Lawrence Ave. W. west of Bathurst St. Approx. $700,000.

Que., Verdun—CITY HALL—Municipality, plans by J. A. Dutrisac, 1069 Beatty Ave., city hall, Church Ave. near Gertrude St. $500,000. Henry Hadley, city engr. CD 11/18/46.

COMMERCIAL BUILDINGS

Ark., Brinkley—HOSPITAL—Sisters of Mercy, Brinkley, plans by Bruggeman, Swaim & Allen, Gazette Bldg., Little Rock, 2 story, 50 bed Memorial Hospital, $500,000 with equip.

▲ Calif., Los Angeles—MATERNITY, etc.—Cedars of Lebanon Hospital, 4833 Fountain Ave., Los Angeles, plans by Kaufmann, Owings & Merrill, 1 Montgomery St., San Francisco, steel frame, concrete maternity and pediatric pavilion bldg. $2,000,000.

▲ Conn., Milford—HOUSING—Milford Lawns, Inc., S. A. Burkland, pres., 21 Daniel St., 100 to 125 family unit housing, roads, drainage sys., curbs, walks, etc., New Haven Ave. and Seabreeze Ave. Sect. $1,000,000.

Ill., Chicago—SCHOOL—St. Salomea Parish, Indiana and 118 Sts., Zone 28, plans by Leo Strelka, 1103 West Gate St., Oak Park, 2 story, bsmnt., 50x100 ft. steel, concrete, brick, stone school. $300,000.

Ill., Decatur—STORE—Newmen's Department Store, Decatur, plans by Sidney H. Morris & Assocs., 118 N. LaSalle St., Chicago, remodeling Newman's store. $250,000.

Kan., Eldorado—HOSPITAL—Susan B. Allen Memorial Hospital, plans by Jamieson & Spears, Arcade Bldg., St. Louis, Mo., hospital addn. $680,000.

Ky., Louisville—RESIDENCES—Marshall Realty Co., Breckenridge St., fifty 1½ story, bsmnt., brick residences, Eastmore Subdivision. $550,000.

Miss., Canton—HOSPITAL—Kings Daughters Hospital, c/o Trollo & Liddle, archts., 404 Barnett-Madden Bldg., Jackson, hospital annex. $300,000.

▲ N. M., Albuquerque—HOSPITAL—Presbyterian Hospital, 610 Gale W., Hosp. Dr. N.W., Bank, plans by Meem, Zehner & Assoc., Box 628, Santa Fe, masonry hospital addn. $1,000,000.

N. Y., Jamaica—HOSPITAL—Jamaica Hospital, 89 Ave. and Van Wyck Blvd., plans by Bessell & Matz, 213 E. 38 St., New York, Zone 16, hospital alterations. $850,000. CD 11/4/46.

▲ N. Y., New York—APARTMENT—Watson Gardens, Inc., 321 E. 149 St., Zone 55, plans by Sidney Goldhammer, c/o owner, four 3 story apartments, Watson and Wheeler Aves., Watson and Colgate Aves. and Watson Ave. between Wheeler and Colgate Aves. $1,400,000.

▲ O., Cleveland—DEPARTMENT STORE—Federal Department Stores, Inc., 444 Willis St., Detroit, Mich., 2 department stores one on east side and one on west side. $2,000,000.

▲ O., Cleveland—APARTMENT—Whitecliffe Apartments, Inc., 802 Finance Bldg., 600 suite apartment, Rocky River Dr. and Puritas Rd. $6,000,000.

O., Hamilton—DEPARTMENT STORE—Sears Roebuck Co., J. G. Redden, design and construction dept., 925

S. Homan Ave., Chicago, Ill., 2 story, burnt brick, concrete department store, $250,000.

O., Sandusky—HOSPITAL—Order of St. Francis, Hayes Ave., plans by Conrad, Hayes, Simpson & Ruth, Manna Bldg., Cleveland, approx. 50 bed addn. to Providence Hospital, $750,000.

▲ Tenn., Memphis—HOMES—Robert S. Magee, 3944 Minden Rd., 340 homes, Graham St. south of N. C. & St. Louis R.R., Approx. $1,500,000.

Tenn., Memphis—HOME—Union of King's Daughters, c/o Walk C. Jones & Walk C. Jones, Jr., archts., 1215 Poplar St., Home of Incurables addn., $500,000.

▲ Tex., Dallas—MERCANTILE—Neiman-Marcus Co., Main and Ervay Sts., 3 or 4 story addn. to existing 4 story masonry type mercantile, 100,000 addn'l. floor space will be provided, $3,000,000.

▲ Tex., Houston—HOUSING—Brace & Carruth, 70th Garden Oaks St., housing area of North Shepherd and W. 11 Sts., 430 acre site, $1,000,000.

Tex., Houston—DWELLINGS—King & Sheets Co., City Natl. Bank Bldg., 17 addn'l. dwellings, off Pardue and Childress Sts., $250,000.

▲ Tex., Houston—DWELLINGS—W. W. McMillan, 7948 Harrisburg St., plans by T. McCleary, 2017 W. Gray St., 800 masonry frame dwellings, concrete slab fdn., air-conditioning, in Southcrest Addn., $6,400,000.

Tex., Houston—APARTMENTS—North Shepherd Terrace Apartments, Inc., 2518 Times Blvd., plans by Joseph B. Reynolds, 2518 Times Blvd., 63 one story apartments, 60 carport bldgs., 4 laundries, 1 maintenance, concrete slab fdn., south of 29 St., $650,000.

▲ Tex., Houston—OFFICE, etc.—Prudential Insurance Co. of America, Stanolind Bldg., plans by Kenneth Franzheim, 2306 Crawford St., 14 story, comml. office, $5,500,000; 800 carport and auto parking zone, $250,000. Dale S. Cooper Assoc., 420 Sul Ross St., consult. engrs.

Tex., Houston—SHOPPING CENTER—Tom D. Fuland, Long Point Rd., plans by C. H. Kleiner, 3501 Buffalo Dr. and Wylie Vale, 1973 W. Gray St., masonry shopping center, incl. 14,000 seat theater, near Spring Branch, $385,000. Jack Corgan, 2008 Jackson St., Dallas, consult. archt. on theatre.

▲ Tex., Houston—DWELLINGS—South Park Development Co., 4660 Holmes Rd., plans by Perry Johnston, 3908 Main St., for 1950, 500 frame dwellings, concrete fdn., in southeast sect. of city, off Holmes Rd. between Griggs Rd. and Chocolate Bayou, $3,100,000; for 1951, 507 frame dwellings, concrete post fdn., in southeast sect. of city, portion of Sect. 2 of South Park, $3,250,000.

Tex., Houston—DWELLINGS—Tamborello Bros., 4230 Ruskin St., 38 acre area dwelling development, $500,000.

Tex., Houston—DWELLINGS—Triangle Builders, 307 Northwood St., 28 dwellings in Craigwood Addn., $250,000.

Tex., Monahans—RESIDENCES—W. O. Bellamy, Box 86, plans by A. B. Koch, 1314 N. Lauderdale St., 68 frame residences, concrete post fdn., $550,000.

Alta., Edmonton—HOUSES—Capitol Builders, 10404 123 Ave., 35 houses, Approx. $262,500.

▲ Alta., Edmonton—DWELLINGS—Engineered Buildings Alberta Ltd., Jasper and 84 Sts., 300 dwellings, $2,100,000.

Alta., Edmonton—HOUSES—Wm. Krueger, 10302 137 St., 50 houses, Approx. $375,000.

Alta., Edmonton—THEATRE—Odeon Westerns Ltd., c/o H. A. Freidman, Canadian Bank of Commerce Bldg., Edmonton, plans by Kaplan & Sprachman, 105 Dundas St. W., Toronto, theatre at 100th St. Jasper Ave., Approx. $300,000. ED 6-26.

▲ Man., St. Vital—HOUSES—F. A. Mager, St. Vital, 186 houses, Approx. $4,000,000.

▲ Que., Hull—ORPHANAGE—Reverend Dominicaines Sisters, 1455 Blvd. Mont Carmel, Three Rivers, plans by Gascon & Parent, 7934 E. Ste. Catherine St., Montreal, orphanage, Aylmer Rd., $1,000,000.

INDUSTRIAL BUILDINGS

Ala., Alexander City—PLANT—The Cherokee Centrifugal Foundry Co., Alexander City, casting plant, $150,000.

Ala., Phenix City—PLANT—Fertilizer Co-operative, c/o W. G. Patterson, Dawkins, fertilizer plant, $500,000.

Ark., Little Rock—GARAGE—Southwest Hotels, Inc., Markham and Louisiana Sts., plans by Wittenberg, Delony & Davidson, Pyramid Bldg., 5 story modern automobile parking bldg., in downtown Little Rock, $500,000.

Ark., Pine Bluff—PLANT—Terry Dairy Products, c/o Sanders & Cromwell, Hoyt Bldg., Little Rock, pasteurization plant, $200,000.

Conn., Bridgeport—FACTORY—Singer Co., 803 E. Washington Ave., 3 story, brick, concrete factory, Pembroke St. $400,000. Austin Co., 19 Rector St., New York, N. Y., consult. engrs.

▲ Fla., Bartow—PLANT EXPANSION—International Minerals & Chemical Corp., Bartow, plant expansion incl. headquarters office, multiple phosphate ammonium plant, sulphuric acid plant, machine shop, warehouse, service center, analytical laboratory, $4,000,000.

La., Cotton Valley—GAS TERMINAL—Hixan Petroleum Co., c/o Hixan Oil & Gas Co., Magnolia, Ark., facilities, repair and expansion liquefied petroleum gas terminal, $100,000.

▲ Mich., Holland—PLANT—Parke-Davis Co., Jos. Camp at River, Detroit, masonry structural steel plant, on 22 acre tract, $1,500,000.

O., Norwood (Br. Cincinnati)—FACTORY—Laurens Bros., Inc., 2780 Highland Ave., Norwood Station, Cincinnati,

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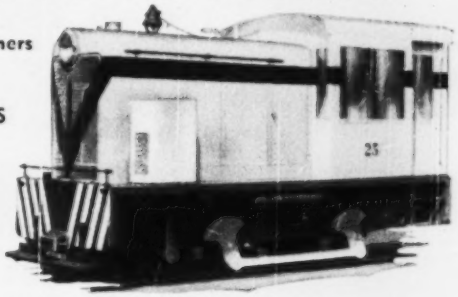

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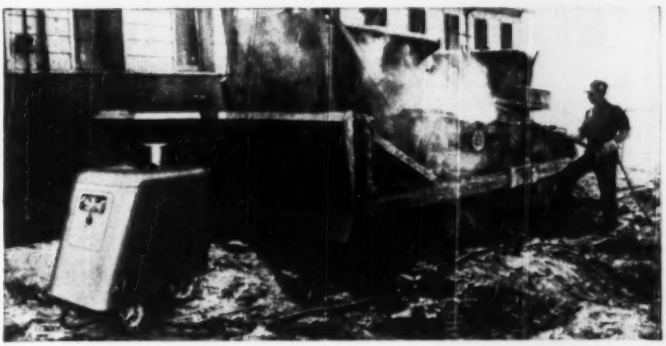

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YOUNGSTOWN 1, OHIO

Zone 12, 1 story, no bsmnt., approx. 12,000 sq. ft. brick factory. J. R. Biedinger, Traction Bldg., 432 Walnut St., Cincinnati, engr.

▲ Pa., Erie—POWER PLANT—Pennsylvania Electric Co., Johnstown, 125x228 ft. masonry, steel frame power plant addn. and modernization, $12,500,000. Gilbert Assoc., Inc., 412 Washington St., Reading, consult. engr. CD 10/27.

▲ Tex., Dallas—PLANT—General Portland Cement Co., Republic Bank Bldg., cement plant expansion, $1,500,000.

▲ Tex., Fort Worth—CEMENT PLANT—Trinity Portland Cement Co., Div. of General Portland Cement Co., Fort Worth Natl. Bank Bldg., cement plant expansion, $650,000; cement plant expansion, $750,000.

Tex., Galveston—PLANT—Kane Boiler Wks., Inc., 2715 Mechanic St., plant expansion for mfg. welded steel pipe up to 36 in., $750,000.

▲ Tex., Tyler—PLANT—American Republics Corp., Petroleum Bldg., Houston, converting liquid extraction sect. of pressure maintenance plant from compression type to absorption type, $1,250,000.

W. Va., Huntington—PARKING GARAGE—Third-Eighth Realty Co., Huntington, auto parking garage, $300,000.

Alta., Calgary—PLANT—Canadian Western Natural Gas Co., Ltd., Calgary, plant imprvt., addn., $200,000.

N. S., Halifax—CENTRAL HEATING PLANT—George Bromley, Wolfville, central heating plant, $100,000.

Ont., Hamilton—PLANT—Life Savers Corp., E. J. Noble, chn., Port Chester, N. Y., plant, Approx. $600,000.

▲ Ont., Sarnia—OIL REFINERY, etc.—Canadian Oil Companies Ltd., 204 W. Richmond St., Toronto, oil refinery and tank farm near Sarnia Indian Reserve. Approx. $5,000,000.

Ont., Sturgeon Falls—MILL—Abitibi Power & Paper Co., Ltd., 408 University Ave., Toronto, mill, $250,000.

UNCLASSIFIED

Colorado—RURAL DISTRIBUTION LINES—North Park Rural Electric Assoc., Walden, 305 mi. rural distr. line; 31 mi. 44 kv transmission line, addnl. generating facilities and system imprvs., Jackson Co. $845,000.

Ill., Peoria—FARM YOUTH BLDG.—Exposition Garden Fair Grounds of Peoria Co., J. V. Chiles, pres., Peoria, farm youth bldg. $100,000.

Kansas—RURAL DISTRIBUTION LINES—Leavenworth-Jefferson Electric Co-operative, McLouth, 88.5 mi. rural distr. line, sys. imprvs., Leavenworth Co. $245,000.

Kan., Enterprise and Navarre—BOOSTER STATION—Michigan-Wisconsin Pipe Line Co., 704 Michigan Bldg., Detroit, Mich., pipe line booster station near here $250,000.

Louisiana—RURAL DISTRIBUTION LINES—Northeast Power Co-operative, Inc., Winnsboro, 136 mi. rural distr. lines, sys. imprvs., Franklin Co. etc. $250,000. Swanson-McGraw & Hooper, Baiter Bldg., New Orleans, engrs. CD 2-27.

La., New Orleans—DRIVE-IN THEATER—Laten, Inc., c/o David Gayveston & Harry Latter, 10 Newcomb Blvd., drive-in theater, $250,000.

Minnesota—RURAL DISTRIBUTION LINES—Central Minnesota Co-operative Power Assoc., Clements, 20 mi. rural distr. lines, sys. imprvs., Redwood Co. $275,000.

Missouri—RURAL DISTRIBUTION LINES—Inter-county Electric Co-operative Assoc., Licking, 484 mi. rural distr. lines, sys. imprvs. $900,000.

† N. J., Fort Monmouth—FIELD HOUSE—U. S. Emg., Fort Monmouth, 185x204 ft., athletic field house, $650,000.

North Dakota—RURAL DISTRIBUTION LINES—North Central Electric Co-operative, Bottineau, 658 mi. rural distr. lines and sys. imprvs., Bottineau Co. $920,000. Ulteig Eng. Corp., 2114½ Front St., Fargo, consult. engrs. CD 9-2-48.

▲ O., Cleveland—PARKS—City, City Hall, Lakeside and 6 Sts., public parks, $1,500,000. Ohio Supreme Court declared bonds voted November 1949 illegal because proceedings for submission of these bonds begun before the Ohio State Legislature reduced requirement from 65% to 55% majority. CD 11/21.

Tenn., Millington—GAS PIPE LINE—Memphis Light, Gas & Water Comn., 179 Madison Ave., Memphis, install gas pipe line 8 mi. from point east of Millington to Millington. $250,000.

▲ Texas and Louisiana—LOOP LINES—Joint Gas Pipe Line Co., Slattery Bldg., Shreveport, La., 106 mi. 20 in. loop lines on existing Carthage Tex.-Sterlington, La. main line, $5,213,300; 28 mi. 16 in. gas line from connections in Cameron Meadow gas field in La. to near Port Arthur, Tex., $1,792,000.

Tex., Lubbock—LIGHTING SYSTEM, etc.—City, W. H. Rodgers, mayor, street lighting sys. and municipal electric light plant expansion, $650,000. G. K. Harris, city engr. CD 12/19/45.

▲ Alberta—NATURAL GAS LINES—Northwestern Utilities Ltd., Edmonton, drilling, connecting up six new wells in Viking-Kinsella field, incl. 11 mi. 4 in. pipe, Kinsella, $934,500; constr. new intermediate pressure lines within city of Edmonton, $643,000; transmission lines and service connections, Fort Saskatchewan, $519,000; construct 8 in. transmission line from Imperial Oil Absorption plant at Devon to Edmonton, $448,000; regulating station at eastern limits of city of Edmonton, $335,000.

Ont., Broomfield (Postal Dist. Sarnia)—OIL DEVELOPMENT—Sun Oil Co., Ltd., 3550 St. Patrick St., Montreal, Que., oil development, $100,000.

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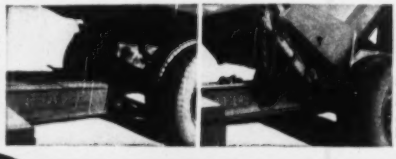

Showing cable around sheave and dump body about to be raised to engage towing tongue.

Body elevated. Tightened cable has raised drawbar and engaged towing tongue. Safety coupling pin is inserted. Trailer is ready to roll when body is lowered.

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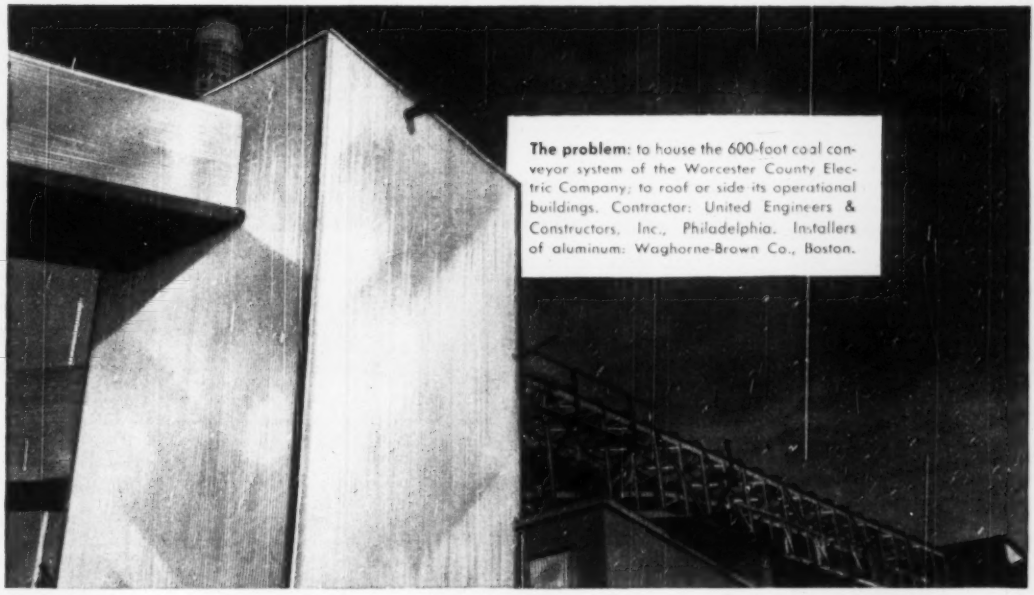

The problem: to house the 600-foot coal conveyor system of the Worcester County Electric Company; to roof or side its operational buildings. Contractor: United Engineers & Constructors, Inc., Philadelphia. Installers of aluminum: Waghorne-Brown Co., Boston.

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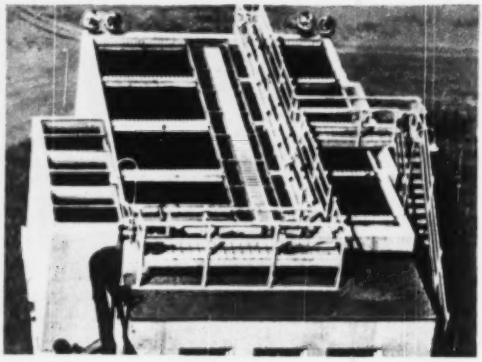

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CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

O., Toledo—B.A. 4/25—City, install approx. 4,200 ft. 24 in. water main, fittings in Goddard Rd. from Monroe to W. Bancroft Sts. $160,000. Plans deposit $10. William C. Jones, c/o owner, Water Div. Engr. CD 11/1.

Pa., Allentown—B.A. 4/25—City, at office George W. Kistler, clk., City Hall, filtration plant exten. and high service pumping station, appurtenances. Contr. 2, filter equip.; piping appurtenances. Contr. 3, pumping and electrical equip., appurtenances. Plans deposit $50. Morris Knowles, Inc., 1312 Park Bldg., Pittsburgh engr. CD 1/24, under LB.

Tex., New Braunfels—B.A. 4/26—City, well pump station, booster pump station, concrete reservoir, concrete fdn. for steel standpipe. $75,000. Plans deposit $25. Julian Montgomery, 602 West Ave., Austin, engr. CD 9/28/49.

Ind., New Castle—B.A. 5/1—City, City Hall, 1 m.g. water tank, 1 Ave. and 21 St. $200,000. CD e/n.

La., Edgard—B.A. 5/1—St. John The Baptist Parish Waterworks Dist. 1, c/o Frontiers Engineers, engrs., 823½ Poydras St., New Orleans; water distr. sys., n Reserve. Plans deposit $7.50.

S. D., Kennebec—B.A. 5/1—City, water supply improv. Julian Staven, Rapid City, engr.

Alta., Grimshaw—B.A. 5/1—Secretary, Municipality, Town Hall, 12,300 ft. Class 150 6 in. transite water main, 12 x 12 ft. water cond. 7 ft. deep, rein.-con. water tank hydrant, valves, bends, etc. CD 4/2/46.

La., New Orleans—B.A. 5/3—Sewerage & Water Bd., 526 Carondelet St., Contr. 303-W, 8,200 ft. in. steel water main.

LOW BIDDERS

Calif., Huntington Park—City Council, Apr. 3, replacement steel water mains with c.i. pipe at various locations, from Cannell & Losch Eng. Constr. 8302 S. Center St., Paramount. $73,361

Calif., Tracy—State Div. Architecture, P. Wks. Bldg., Sacramento, elevated steel water storage tank at Vocational & Agriculture Institution, near here, from Chicago Bridge & Iron Co., 22 Battery St., San Francisco. $49,730. CD 3/14.

Ind., Marion—City, at office Bd. P. Wks., City Hall, Apr. 7, Contr. 1, electrification modifications of 7 St. Water Works Pumping Station and Contr. 3, constr. water filtration plant, from C. & C. Constr. Co., Inc., 2001 E. Pontiac St., Fort Wayne. $805,304, est. $690,000. Contr. 2, elevated steel tanks and towers on water distr. sys., from Pittsburgh Des Moines Steel Co., 36 S. Dearborn St., Chicago, Ill., $163,400, est. $180,000. CD 1/31.

† N. M., Albuquerque—U. S. Eng., Box 1530, Test Water Wells, 1, 2, and 3, Serial No. Eng. 29-065-50-33, from Layne-Texas Co., Ltd., 6419 Maple Ave., Dallas, Tex., $47,247.

N. C., Conover—Town, water tank, from Chicago Bridge & Iron Co., 332 S. Michigan Ave., Chicago, Ill., 150,000 gal. tank $27,800, 200,000 gal. tank $33,000.

Tex., Lockhart—City, Apr. 8, WW, from H. B. Zachry Co., Box 2570, San Antonio. $88,408. Bids 3/23 received. L. B. $95,408. CD 3/10, under LB.

Tex., Pasadena—City, Apr. 6, water lines, from Balco, Inc., Pasadena. $31,000. George H. Smith, city engr. Bids 4/6.

Tex., Troup—City, Apr. 3, WW, from D. Foster, Box 364, Tyler. $64,845. Est. $55,600. CD 3/17.

Wash., Bridgeport—Town, Town Hall, Apr. 3, 16,047 ft. 4, to 12-in. water mains, from P. S. Lord Mechanical Contractors, 4507 S. E. Milwaukie St., Portland, Ore., $56,231. CD 3/20.

▲ Wis., Lake—Town of Lake, 4001 S. 6 St., Milwaukee, Mar. 30, WW sys. from Darby-Bogner & Assoc., 759 N. Milwaukee St., Milwaukee. Approx. $1,100,000. CD 3/21.

Wis., New Auburn—Village, water sys. incl. water mains, from Master Bros., Chetek. $35,560. CD 3/15.

CONTRACTS AWARDED

Ark., El Dorado—El Dorado Water Co., El Dorado, clear well for water sys. to E. W. Daniel Plbg. & Htg. Co., 1318 W. 9 St., North Little Rock. $29,839. Bids 4/3. CD 3/23.

† California—U. S. Eng., 751 S. Figueroa St., Los Angeles, city of Whittier and Cate ditch water lines relocation, San Gabriel River, CIVENG 04-353.50-30, to Cannell & Losch Eng., Contractors, 8302 East Center St., Paramount, $87,958. Bids 3/2, awarded 3/7.

Ga., Albany—City, 500,000 gal. water tank, to R. D. Cole Mfg. Co., Newnan. $69,800. Bids 4/3. CD 3/22.

Ia., Humboldt—City, City Hall, water treatment plant, equipment improv., to Lippert Bros., Boone, $88,785. Bids 3/24. CD 3/9.

Mont., Helena—City, City Hall, replacing approx. 23,000 ft. water mains, to Carson Constr. Co., Helena, $110,467. CD 7/28.

Tex., Dallas—A. D. Bobbett, 1925 Cedar Springs St., water lines, own forces. Approx. $35,000.

Tex., Houston—Phylcar Corp., 3028 Washington St., water lines, facilities, own forces. $41,000.

Tex., Houston—R. & R. Development Co., c/o Jolley, Allen & Seaman, Scanlan Bldg., c.i. water lines, own forces. Approx. $37,775.

Tex., Robstown—City, water lines to municipal airport, own forces. Approx. $30,000. H. & M. Engineers, 121 S. Staples St., Corpus Christi, engrs.

Wash., Seattle—City, County-City Bldg., re-laying and adjusting water mains, sewers and other work in connection with Alaskan Way Viaduct, to Argentieri & Colarossi, 1815 Jackson St. $68,484. Est. $68,607. R. W. Finke, city engr.

Que., St. Lambert—City, laying about 3,000 ft. 24 in. water main Contr. C. to Frank Logan, Ltd., 7725 Souligny St., Montreal. Approx. $80,000. Est. $100,000. M. J. Rutledge, c/o owner, engr. CD 2/28.

Sask., Weyburn—Municipality, domestic connections, day labor $28,741 voted. D. L. Sharpe, City Hall, city engr.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Ont., Lindsay—B.A. 4/24—W. R. Allely, town clk., sewage treatment plant, sewage pump station and auxiliary works for Town. Approx. $300,000. Plans deposit $50. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs. CD 12/6/44.

N. Y., Cortlandt—B.A. 4/25—Town Bd. of Cortlandt, at office James H. Ferris, clk., Municipal Bldg., Corton-on-Hudson, designs, construction and installations necessary to establish at town incinerator site, complete with all equip., appurtenances and ready for use, incinerator plant bldg. complete, with main breeching, housing and chimney, rough grading, excav. and backfill, sewage and drainage lines and accessories, incl. plumbing and electrical work. J. Wilbur Irish, 906 South St., Peekskill, town engr.

Calif., Oakland—B.A. 4/28—East Bay Municipal Utility Dist., 512 16 St., sedimentation basins appurtenances, Spec. 50-43. Approx. $50,000. Plans deposit $10. John S. Longwell, ch. engr. CD 11/13/46.

Ort., Allensburg—B.A. 4/29—D. C. Cowan, clk., Thorold Twp., Allensburg, pump house, sewerage sys. for Thorold South Sewer Area. Approx. $75,000.

▲ N. Y., Merrick—B.A. About 5/1—Town Clerk, Town Hall, Hempstead, incinerator plant. $7,000,000. Henry W. Taylor, 11 Park Pl., New York, Zone 7, engr.

Calif., Stockton—B.A. 5/1—City, City Hall, South Sewage Treatment Plant (2nd unit) trickling filters, secondary sedimentation tanks, etc. $225,000. Plans deposit $10. H. M. Dunlap, City Hall, city engr. CD 2/28/49.

Wash., Kirkland—B.A. 5/1—City, City Hall, 8 mi. sewers and 3 pump stations to serve Rose Point. $150,000. H. H. Silser, City Hall, city engr. CD 7/20/45.

LOW BIDDERS

Calif., Los Gatos—Sanitation Dist. 4, Courthouse, Apr. 6 Units 2 and 4 for 15 to 21-in. main trunk sewers joining Los Gatos trunk line to San Jose, from Pisano Bros., 1790 Moorpark Ave., San Jose. $165,390. CD 3/23.

Calif., Oakland—City, City Hall, Apr. 4, sanitary sewers in Thornhill, Oakwood and Armour Drives, etc., from P. & J. Artukovich Inc., 13305 S. San Pedro St., Los Angeles. $72,665. CD 3/27.

Calif., Susanville—Susanville Consolidated Sanitary Dist., Bank of America Bldg., Apr. 4, sewage treatment plant, from Chas. MacCloskey Co., 112 Market St., San Francisco. $178,112. CD 2/28.

▲ Fla., Sarasota—City, City Hall, Apr. 10, sanitary sewer improv. Part 1, from Joe Reinerton, 2027 N. W. 7 Ave., Miami. $651,320; Part 2, from Wright Contr. Co., 504 24 Ave., Columbus, Ga., $812,360; Part 3, from Coleman & Frye, Clearwater. $188,804. CD 3/16.

Miss., Yazoo City—City, City Hall, certain sewer and water lines, from Volz Constr. Co., Ripley, Tenn., $64,462.

Tex., Bartlett—City, Apr. 6, sewage treatment plant, from Hoffman & Borders, Waco. $37,485, numerous ty owners, $15,000, total $52,485. Est. $60,000. CD 3/22.

Tex., Lockhart—City, Apr. 8, sewers, from H. B. Zachry Co., Box 2570, San Antonio. $103,096. Bids 3/23 rejected. L. B. $111,270. CD 3/30, under LB.

Tex., Troup—City, Apr. 3, sanitary sewerage sys., from Wiles, Dane & Steed, P. O. Box 573, Tyler. $57,227. Est. $70,000. CD 3/17.

Wash., Tacoma—City, City Hall, sewers in L.I.D. 1325, between S. Puget Sound and Mason Ave. and B and 19 Sts., from Woodworth & Co., 1200 East D St. $95,319. D. E. Morris, city engr. CD 11/20/44.

CONTRACTS AWARDED

Ia., Onawa—City, City Hall, sewage plant, to O. N. Ljunkrig, Forest City. $198,152. Bids 3/21. Buell & Winter, 1508 Insurance Exchange Bldg., Sioux City, engrs. CD 3/2.

Neb., Fremont—City, storm water drainage, to Dobson Bros. Constr. Co., 809 1st Natl. Bank Bldg., Lincoln, $98,352. Bids 3/28. CD 7/11.

Ore., Oceanlake—City, City Hall, 13,000 lin. ft. 8 and 10 in. incl. 2 lift stations and 105 man-holes to State Constr. Co., 1245 Poplar Pl., Seattle, Wash., $59,552. Est. $65,000. Bids 4/5. CD 3/20.

▲ Pa., Phila.—Dpt. P. Wks., City Hall Annex, intercepting sewer 70 St. to Joseph Lombardi & Sons, 2311 S. Broad St., $717,920***sewers, Schedule C, to Acchione Contg. Co., 1607 McKean St. $86,100*** sewers Schedule B-1, to D. & C. Spinesa, 24 N. W. Jerome St., Allentown, $174,966***sewers various locations, Schedule A-1, to Ludlow Constr. Co., 747 S. 8 St., $230,115. Grand total $1,209,101. CD 3/24, 3/9 and 2/28.

Tex., Dallas—A. D. Bobbett, 1925 Cedar Springs St., sanitary sewers and drainage, own forces. Approx. $60,000.

Tex., Houston—Phylcar Corp., 3028 Washington St., sanitary sewers, own forces. Approx. $65,000.

Tex., Houston—R. & R. Development Co., c/o Jolley, Allen & Seaman, Scanlan Bldg., sanitary sewers, own forces. Approx. $55,000.

Tex., Lake Jackson—Dow Chemical Co., Freeport, sanitary and storm sewers, own forces. Approx. $55,000. CD 2/21.

Tex., Robstown—City, sanitary sewer lines, own forces. Approx. $50,000. H. & M. Engineers, 121 S. Staples St., Corpus Christi, engr.

Tex., Seymour—City, storm sewers $65,000, sanitary sewers approx. $60,000, own forces. Joe E. Ward, Wichita Falls, engr. CD 12/6/46.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

April 24	Kentucky
Connecticut	May 2
April 25	Kansas
West Virginia	Oklahoma
April 28	May 5
Kansas	Pennsylvania

Pennsylvania—B.A. 4/26—Pennsylvania Turnpike Comm., 11 N. 4 St., Harrisburg.

Allegheny Co.—construct 604 ft. substructure of Willow Run viaduct on Western Extension of Pennsylvania Turnpike, Sect. 30 DE.

2,270 ft. substructure of Plum Creek Viaduct on Western Extension of Pennsylvania Turnpike, Sect. 31BC. Plans deposit $10 each. R. B. Stone, c/o owner, ch. engr.

Pennsylvania—B.A. 4/26—Pennsylvania Turnpike Comm., 11 N. 4 St., Harrisburg.

Allegheny Co.—superstructure for Plum Creek Viaduct, Plumb Twp. and Willow Run Viaduct, Hampton Twp.

Westmoreland Co.—superstructure for Brush Creek Viaduct, North Huntingdon Twp.

▲ Ont., Ottawa—B.A. 4/26—R. Forster, acting secy., Dpt. P. Wks., Hunter Bldg., Ottawa, substructure and superstructure of highway bridge over Rideau Canal; approaches from Elgin St. between Slater and Alberts Sts. west bank of Rideau Canal to Waller St. (between Stewart and Wilbrod Sts.) on east bank of Rideau Canal. $3,000,000. Plans deposit $50. R. Blais, c/o owner, engr. CD 10/15/46.

† California—B.A. 5/2—U. S. Eng., 751 S. Figueroa St., Los Angeles, reconstruct Santa Fe R. R. bridge over San Diego River Channel, CIVENG 50-31, $500,000-$1,000,000.

New Jersey—B.A. 5/4—New Jersey Turnpike Auth., Bldg., Trenton,

Burlington Co.—Contr. 2B, bridge across Rancocas Creek, Sect. 3. CD 7/13.

LOW BIDDERS

▲ New Jersey—New Jersey Turnpike Auth., Veterans Room, War Memorial Bldg., Trenton, Contr. 15, substructures and superstructures of Morse's Creek Bridge and Railroad Av. viaduct which will form part of new superhighway in Linden-Union Co. from Interstate Contr. Corp., 505 Jersey Ave., New York, N. Y., $1,683,740. CD 5/17.

▲ New York—Bureau Contracts and Accounts, Albany, Apr. 12, elimination of all Lackawanna R.R. grade crossings and relocating Steuben Co. from The Lane Constr. Corp., 37 Colony St., Meriden, Conn., $7,805,798. Est. $8,200,000. CD 3/29.

CONTRACTS AWARDED

Fla., Miami—Dade Co., Courthouse, fascicle bridge over Miami Canal on S. E. 4 Ave. to Joseph G. Morrett, Inc., 2461 N.W. 7 St., $515,852. Bids 3/21. CD 3/29, under LB.

▲ New Jersey—New Jersey Turnpike Auth., War Memorial Bldg., Trenton, Contr. 14, construct 25 piers, one abutment and foundation for south approach and 25 piers, one abutment foundations for north approach of Passaic River Bridge structure, Hudson and Essex Counties, to George M. Brewster & Son, 275 W. Fort Lee Rd., Bogota. $3,855,960. Bids 3/23, awarded 4/6. CD 3/27, under LB.

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STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

April 24
Connecticut
April 25
Maryland
West Virginia
April 26
Maine
April 28
Kansas
Kentucky
Minnesota

May 2
Kansas
Oklahoma

May 3
California
Louisiana

May 4
California

May 5
Pennsylvania

Minn., Buffalo—B. A. 4/25—Wright Co.: R. H. Jewett, asst., grading 3.2 mi. between SAR 10 at French Lake and 3.2 mi. north, Proj. S. P. 86-502-06 (SAR 1); Minn., Proj. S. 332 (6). Plans deposit $1.45, and grading 3 mi. between SAR 3 and Trunk Hy. 55, Maple Lake, Proj. S. P. 86-525-01 (SAR 10); Minn., Proj. S. 568 (11). Plans deposit $1.10. Approx. $50,000. C. Turnell, co. hy. engr. CD 2/3/44.

Minn., Granite Falls—B.A. 4/26—Yellow Medicine Co.: G. L. Swanson, asst., grading 7 mi. road between 5 mi. east of St. Leo and Trunk Hy. 59 south of Clarkfield, Proj. S. P. 87-510-03 (SAR 3); Minn., Proj. S. 277 (2). Plans deposit $1.70; 4 mi. road between SAR 8 N. E. of Clarkfield and SAR 7, Proj. S. P. 87-514-01 (SAR 5); Minn. Proj. S. 571 (1). Plans deposit $1.10; 6.2 mi. between 4 mi north of Trunk Hy. 67 and Trunk Hy. 212 S. W. of Montevideo, Proj. S. P. 87-516-01 (SAR5) and S. P. 37-520-01 (SAR 12); Minn. Proj. S. 570 (11). Plans deposit $2. Approx. $50,000. W. B. Griebler, co. engr.

La., Abbeville—B.A. 5/1—City, c/o Emile Dutel, mayor, 15,590 sq. ft. concrete sidewalks.

† California—B.A. 5/4—Bureau Reclamation, Dpt. Interior, Box 471, Redding, improv. streets at Shasta Dam and Power Plant, Spec. #2-103.

Tex., Abilene—Bids Asked—Raymond Thomason, Abilene, street constr., paving, $50,000.

LOW BIDDERS

† California—Bureau Public Roads, Dpt. Commerce, 180 New Montgomery St., San Francisco, Apr. 6, hy. improv. 3.265 mi. Proj. 95-C, Mt. Pinos, Los Padres National Forest, Kern and Ventura Counties, from Kleinsmid Constr. Co., Box 971 Bakersfield, $151,117. CD 3-28.

California—State Div. Hys., 120 S. Spring St., Los Angeles, Apr. 6, plant mix surf. and apply seal coat 11.2 mi. between Del Mar and San Onofre, San Diego Co., from Griffith Co., 1060 S. Broadway, Los Angeles, $172,724. CD 3/15.

Calif., San Mateo—City, City Hall, improv. 25 Ave., etc., from Lowrie Paving Co., 1755 Evans Ave., San Francisco, $57,797; improv. S. El Camino Real, Res. 49-7a, from L. C. Smith, 1 and Railroad Sts., San Mateo, $71,325.

Kentucky—State Hy. Dpt., Frankfort, rejected bids Mar. 31, traffic bound limestone 11.279 mi., Browning Rd., Proj. RS 114.468, Warren Co.; L. B. $78,989***; traffic bound limestone 11.305 mi., Stacy Fork Rd., Greasy Creek, Wrigley-Blairs Mill Rd. and Lane Rd., Proj. RS-68.196, (68-158) (68-318), Morgan Co.; L. B. $73,748***bank or creek gray, 0.76 mi. Paducah-Oaks Symsonia Rd., Proj. S. 75(2), SP 73-412, McCracken Co., L. B. $103,150. CD 4/12, under LB.

▲ Maryland—State Rds. Comm., Baltimore, Mar. 28, grading-drainage, surf., relocation U. S. Rte. 220 beginning at north abutment of Keyser-McCool Bridge in McCool and exten. northerly to point on McCool-Cumberland Rd. (U. S. Rte. 220), Contr. A-283-361, Fed. Aid Proj. F-189 (4), Allegheny Co., from Fenstermaker Co., 1 E. Calvert St., Baltimore, $565,860***; constr. 1.015 mi. sectional dual hy. along Friendship Airport Rd. beginning at Oak Rd. and exten. northeasterly to new concrete dual hy. at northwest boundary of Friendship International Airport, Contr. AA-392-3-135, Anne Arundel Co., from Williams Constr. Co., Middle River, $451,950***furnishing, del., supply to, and install 3,707 mi. spec. B, w/d'n. resurf. along Hanover Pike (State Rte. 30) beginning at point approx. 1 mi. north of Hampstead and exten. northwesterly through Manchester, Contr. CL-317-1-315, Carroll Co., from Harry T. Campbell Sons Corp., Towson, stone $180,900, slag $184,307. CD 3/15.

Maryland—State Rds. Comm., Baltimore, Mar. 30, bit. stabilized base, course and B. conc. gray, aggregate surf. 1.1721 mi. Main Davidsonville Rd., beginning at Mays Rd., approx. 0.2 mi. N. W. of State Rte. 468 and exten. north westerly to Davidsonville Rd., Contr. AA-241-3-415, Anne Arundel Co., from E. Stewart Mitchell Inc., 1301 Ridgewood Ave., Baltimore, $59,677. CD 3/22.

▲ Massachusetts—Commonwealth of Mass., Dpt. P. Ws., Boston, Apr. 4, state hy. and bridge constr., Great Barrington-Monterey Rd., S-22(2), Great Barrington, from John De Michiel & Bros., Torrington, Conn., $116,918***state hy. and bridge constr., Worcester-Providence Hy., F-256(9), Uxbridge, from G. Rotondi & Sons, 215 Laurel St., Melrose, $1,564,408 and exten. north westerly to Davidsonville Rd., 3.1 (Sheet) Plymouth, from DeMatteo Co., 200 Hancock St., Quincy, $1,877,896. CD 3/20.

Minn., Duluth—City, C. D. Jenkinson, Clks., Mar. 30, constr., approx. 40,000 sq. ft. concrete and cement sidewalks, Norman S. Peterson, 740 E. Superior St., $59,819. CD 3/30.

▲ New Jersey—New Jersey Turnpike Auth., War Memorial Bldg., Trenton, Apr. 12, Contrs. 3, 3A and 3B, grading, drainage structures, overpass, underpass, stream bridge structures, etc. for Sect. 1, Deepwater to Woodbury, Salem and Gloucester Counties, from S. J. Groves & Sons Co., State Hy. 35, Woodbridge, $5,095,733. CD 3/23.

N. C., Winston-Salem—City, City Hall, Apr. 4, street paving and sidewalk constr. from L. A. Reynolds Co., Inc., 2100 W. 1st St., $66,382. CD 3/30.

▲ Pennsylvania—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, Apr. 4, construct structures and grading, drainage, paving Sect. 31 C, Western Exten. of Pennsylvania Turnpike from point approx. 1,356 ft. west of Unity-Trestle Rd. in Plum Twp. easterly, 15,460 ft. to point approx. 421 ft. east of Monroeville-Trestle Rd. in Patton Twp., 2.93 mi., Allegheny Co. from Rochez Bros., 1560 Electric Ave., Pittsburgh, $1,664,781. CD 3/17.

▲ Pennsylvania—State Hy. Dpt., Harrisburg, Mar. 31, crushed aggregate base with bit. surf. 20 ft. wide and bit. surf. 20 ft. wide for adjustment 19.239 ft. L. R. 17 Spur (3), T. R. 487 from point in Dushore Boro. south, Sullivan Co., from Joseph Ciccone, Tyland Rd., Tyland, $234,110**crushed aggregate base with bit. surf. 18 ft. wide and reconstructed base with bit. surf. variable in width, 16,985 ft. L. R. 58065, Sect. 3, from point near intersection of L. R. 549, northerly towards Jobs Corners, Tioga Co., from A. L. Blades & Sons, 42 Broadway, Hornell, N. Y., $206,842***widn. pavement with plain c. conc. base and crushed aggregate base 15 ft. and variable in width and bit. surf. new base and existing pavement 33 ft. and variable in width, incl. metal plate pipe arch and exten. 2 rein.-con. structures, bit. surf. pavement 33 ft. to 18 ft. wide, 16,725 ft. L. R. 6 (2A), T. R. 15 & 16, from point in Waymart Boro. westerly to the Lackawanna-Wayne line, Wayne Co., from A. B. Cole, Meshoppen, $325,039.

Widn. pavement with bit. base types 1 and 11, crushed aggregate base and plain c. conc. base 4 ft. and variable in width, bit. surf. new base and existing pavement 20 ft., 22 ft. and variable in width and the exten. 2 bridges 53,630 ft. L. R. 214 (R-5), T. R. 68, from point in Sugar Boro. northeasterly toward Clarion, Clarion Co., from The Kelley & Meyer Co., 1211 Lisbon St., Youngstown, $415,193***crushed aggregate base with bit. surf. 18 ft. wide and one 1-beam bridge 11,392 ft. L. R. 22334 (1), from Lykens Twp.-Gratz Boro line, southwesterly, Dauphin Co., from D. A. Kessler Constr. Co., Inc., 124 Ave., Mt. Carmel, $126,942***crushed aggregate base with bit. surf. 18 ft. wide and variable in width, incl. rein.-con. box and rein.-con. bridges 25,505 ft. L. R. 346 (2), T. R. 45 between Spruce Creek and Seven Stars, Huntingdon Co., from County Constr. Co., 25 E. Main St., Carnegie, $405,481***widn. pavement with plain c. conc. base and crushed aggregate base 4 ft. and variable in width, bit. surf. new base and existing pavement 22 ft. wide, incl. exten. box, construct crushed aggregate base with bit. surf. 22 ft. wide, surf. pavement with bit. surf. 16 ft. wide, exten. 5 bridges 30,501 ft. L. R. 54 (R-4), T. R. 80 from Indiana Boro. line northeasterly to point 1.9 mi. from Clymer, Indiana Co., from A. P. Moreau & Sons, Inc., Indiana, $394,259. CD 3/7.

Texas—State Hy. Comn., Austin, cancelled bids to have ben opened Apr. 19, flexible base, one course surf., tr., 8.515 mi. Hy F.M. 1046 and F.M. 1469 from Old River Rd. to Hy. 60 at Waldsworth and from Hy. 60 at Waldsworth, east to county road intersection, Control No. 847-4-1 and R 847-5-1, Matagorda Co. CD 4/5.

Wash., Tacoma—City, City Hall, paving S. Washington St. between 41 and 58 Sts., in L.I.D. 4469, from Asphalt Paving & Eng. Co., P.O. Box 106, South Tacoma, $120,955. D. E. Morris, city engr. CD 11/14.

West Virginia—State Hy. Comn., Charleston, rejected bids Mar. 28, traffic bound 0.151 mi. end of Project S-576(11), to Penn State Line Rd., Project 6720, Marshall Co., L. B. $2,937; traffic bound 3.731 mi. Tunnel Hill Rd., Project S 576 (2), Marshall Co., L. B. $113,785. CD 3/17.

CONTRACTS AWARDED

Ala., Mobile—Mobile County Bd. Revenue & Road Comrs., Mobile, 8 road improv. projects, Improvs. 34 and 35 to Laidlaw Contg. Co., Mobile, $79,321 and $128,429 respectively**Improvt. 28, to W. A. McWatters, Inc., Montgomery, $52,865**, Improvt. 7, to Dozier Bros., Mt. Meigs, $76,971. Grand total $337,586. Bids 3/21. CD 2/28.

Arizona—State Hy. Dpt., Phoenix, select material, base material, plant mix surf. seal coat 5¾ mi. Holbrook-Lupton Hy. over existing pavement, Navajo Co., to Acme Material-Daley Constr. Co., 2400 S. 16 St., Phoenix, $212,362. Awarded 3/17.

Ia., Guthrie Center—City, City Hall, street improvs., to Booth & Olson Insurance Exchange Bldg., Sioux City, $67,238. Bids 3/21. Buell & Winter, Insurance Exchange Bldg., Sioux City, engr. CD 3/13.

Kan., Lawrence—City, City Hall, repair & resurf. to Constant Constr. Co., Lawrence, $99,600. Bids 3/27. J. C. Harper, city engr.

▲ Massachusetts—Commonwealth of Mass., Boston, state hy. and bridge constr., Rte. 15, Sturbridge to White Oaks Excav., Inc., 61 E. Main St., Plainville, Conn., $1,386,405. Bids 3/7, awarded 3/29. CD 3/22, under LB.

Minn., St. Paul—State Hy. Dpt., St. Paul, hy. work in Maintenance Div. Projects, Dist. Nos. 1 and 4, to C. L. Nelson, Brainerd, $53,850. Bids 3/31. CD 3/15.

Nevada—State Hy. Dpt., Carson City, 11.574 mi. highway improvt. from 5 mi. south of Comet Coal-

Sion Mine to Castleton Mill, Lincoln Co.; to Foster & McHarg, Box 244, Riverside, Calif., $184,360. Bids 4/6. CD 3/22.

North Carolina—State Hy. & P. Wks. Comsr., Raleigh, traffic bound macad. or FCSBC or SPCC with bit. surf. or sand asph. or bit. conc. 24.6 mi. 8 sections county roads, Proj. 5-9-49-204, Rockingham Co., to Nello L. Teer, Box 2132, Durham, $216,489. Est. $225,000-$250,000. Bids 3/30. CD 4/4, under LB.

North Dakota—State Hy. Dpt., Bismarck, air-entrained c. conc. pavement, etc. 15.758 mi. U. S. Hy. 81 from Fargo south, F-1 (6), Cass Co., to Western Contg. Co., 800 Benson Bldg., Sioux City, Ia., $772,788. Bids 3/3. CD 3/7, under LB.

▲ **Oklahoma**—State Hy. Dpt., Oklahoma City, Zone 5, to Austin Bridge Co., 2813 Clarence St., Dallas, Tex.: asph. stabil. base, double bit. surf. course 7.639 mi. State Hy. 74 north of Crescent, Logan Co., $120,251, est. $125,557; asph. stabil. base, double bit. surf. course 2.7 mi. State Hy. 74 north of Crescent, Logan Co., $125,496, est. $124,648; asph. stabil. base, single bit. surf. course 5.81 mi. Hy. 6666, Logan Co., $97,245, est. $110,125; asph. stabil. base, double bit. surf. course 9.471 mi. State Hy. 74 south of Covington, Garfield Co., $150,338, est. $186,448;***to Brock Constr. Co., Woodward: single bit. surf. 6.401 mi. State Hy. 33, Beaver Co., $105,711, est. $104,591; single bit. surf. 7 mi. State Hy. 33, Beaver Co., $131,263, est. $126,482; asph. stabil. base, single bit. surf. course 6.95 mi. Hy. 6666, Beaver Co., $105,711, est. $129,967; asph. stabil. base, single bit. surf. course 8 mi. State Hy. 33 at Hammon, Roger Mills Co., $173,992, est. $199,975;***to Gaines Bros., Miami: traffic bound surf. 6.34 mi. farm to market road, Seminole Co., $94,978, est. $95,657; traffic bound surf. 5.001 mi. farm to market road, Seminole Co., $53,240, est. $53,387;***to Fire Ward Co., Insurance Bldg., Oklahoma City, Zone 2: stabil. aggr. base, double bit. surf. course 7.801 mi. U.S. 281, Major Co., $170,022, est. $170,215; asph. stabil. base, single bit. surf. course 7.999 mi. Hy. 6666, Dewey Co., $138,528, est. $159,900; asph. stabil. base, single bit. surf. course 3.92 mi. Hy. 15, Major Co., $142,089, est. $129,190;***to Smith Bros. & Noble, traffic bound surf. 4.61 mi. farm to market road at Maysville, Garvin Co., $67,082, est. $82,325; traffic bound surf. 6.974 mi. farm to market road at Maysville, Garvin Co., $124,866, est. $151,071; asph. stabil. base and double bit. surf. 8 mi. U.S. 60 east of Arnett, Ellis Co., $140,560, est. $151,724; single bit. surf. course 7.971 mi. State Hy. 51, east of Ryan, Jefferson Co., $140,978, est. $155,712;***to Ryan-Richards Co., 1401 N. W. 5 St., Oklahoma City, Zone 6: asph. stabil. base, single bit. surf. course 5.527 mi. State Hy. 41 at Sweetwater, Beckham Co., $135,602, est. $145,899;***to F. & H. Constr. Co., 3715 N. W. 23 St., Oklahoma City, Zone 7, grading, drainage, minor structures, double bit. surf. course 3.843 mi. State Hy. 32, east of Ryan, Jefferson Co., $66,602, est. $83,746; asph. stabil. base 7.107 mi. State Hy. 32, east of Ryan, Jefferson Co., $71,300, est. $88,586;***to Stanley Constr. Co., Altus: grading, drainage, minor structures 6.95 mi. Beaver Co., $50,525, est. $49,799. Grand total $2,406,379. Bids 4/4. CD 3/29.

Okla.—Oklahoma City—City, City Hall: asph. paving Dist. 1115, to Metropolitan Paving Co., 300 S. Indiana St., Zone 4, $69,834. Est. $71,000. Awarded 4/4. H. E. Base, c/o owner, engr.

Ore.—Portland—Multnomah Co., Courthouse: grading, paving, Cleveland Ave. from Stark to Powell Sts., to Edlefsen-Weyandt Co., 9344 N. Calvert St., $53,289. Awarded 4/6. CD 12/1/48.

Tex.—Dallas—A. D. Bobbett, 1925 Cedar Springs St.: street constr. and asph. paving, own forces. Approx. $60,000.

Tex.—Houston—Phylcar Corp., 3028 Washington St.: street constr. and asph. paving, own forces. Approx. $90,000.

Tex.—Houston—R. & R. Development Co., c/o Jolley, Allen & Seaman, Scanlan Bldg.: concrete street paving, own forces. Approx. $81,000.

Tex.—Lake Jackson—Dow Chemical Co., Freeport: street constr. and asph. paving, own forces. Approx. $58,000. CD 2/21.

West Virginia—State Hy. Comm., Charleston: traffic bound 2.026 mi. Norton-Belington Rd., Proj. F 117 (3), Randolph Co., to Atlas Eng. Co. & Sam G. Polsie, Elkins, $222,683;***traffic bound 4.84 mi. Washburn-Pullman Rd., Proj. 6863, Ritchie Co., to J. E. Allen & Co., Clarksburg, $181,104;***traffic bound 2.356 mi. McKim Creek Rd., Proj. 7469, Pleasants Co., to Stickley Bros. Inc., Keyser, $77,125;***traffic bound 3.814 mi. Skinnston-Kilarm Rd., Proj. S 598 (1), Harrison and Marion Counties, to Bennie Snyder, Franklin, $117,900. Bids 3/28. Grand total $598,812. Bids 5/28. CD 3/17.

▲ **Wisconsin**—State Hy. Comm., Madison, to Mathy & Thornton Construction Company Consolidated, 506 Hoeschler Bldg., La Crosse, bit. 9.161 mi. West Co. Line-Loganville Rd., S.T.Hy. 154, Proj. T 021e (2), Contr. 2, Sauk Co., $80,309; bit. 9.703 mi. U.S.H. 12—East County Line Rd., S.T. Hy. 21, Proj. 0500 (11), Contr. 2, Monroe Co., $94,420; bit. 12.186 mi. Ellsworth-River Falls Rd., S.T. Hy. 35, Proj. F 028-2 (14), Contr. 2, Pierce Co., $94,256;***to J. R. Griffith Co., 1500 North Co., Racine: grading, draining 3.028 mi. Illinois State Line-U.S.H. 61 Road, S.T. Hy. 35, Proj. F-030-1 (22), Contr. 3, Grant Co., $92,312; c. conc. 10.18 mi. Viroqua-Readstown Rd. U.S. Hys. 14 and 61, Proj. F 08-2 (17), Contr. 1, $503,996;***to Streu Constr. Co., Inc., 2004 14 St., Two Rivers; c. conc. 8.474 mi. LaCrosse-Calvert and LaCrosse-Coon Valley Rd., U.S. Hys. 14 and 61 and S.T. Hy. 35, Proj. F 08-1 (24) and F 08-2 (16), Contr. 1, La Crosse Co., $618,147; c. conc. 2.946 mi. North Co. Line—Westby Rd., U.S. Hys. 14 and

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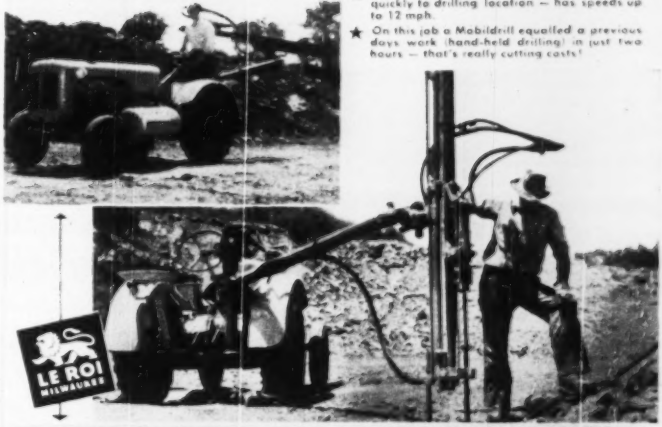

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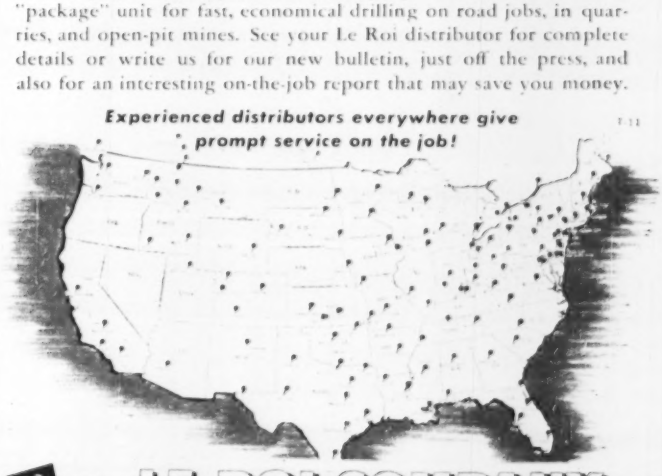

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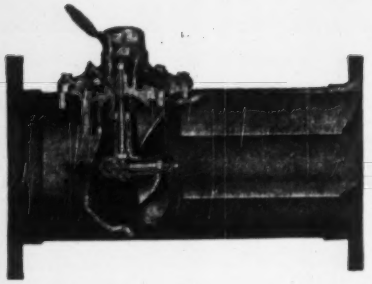

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62, Proj. F 08-2(24), Contr. 1, Vernon Co., $183,887 ***to L. G. Arnold Inc., Box 228 Eau Claire, c. conc. 9.466 mi. Pigeon Falls-Osseo Rd., U.S. Hy. 53, Proj. F-08-3(3) Contr. 1, $479,897***to Rock Road Constr. Co., 4520 Winnequah Rd., Madison, Zone 4, bit. 8.511 mi. Waupun-Brownsville Rd., S.T. Hy. 49, Proj. S 0538 (1), Contr. 4, Dodge and Fond du Lac Counties, $81,757***to Payne & Dolan of Wisconsin, Inc., 735 N. Water St., Milwaukee, Zone 2, b. conc. 7.75 mi. Waterford-Waukesha Co. Line Rd., S.T. Hy. 36, Proj. T 064-1 (8), Contr. 1, Racine Co., $198,059***to N.M. Isabella, Inc., 714 Market Pl., Madison, c. conc. 2.996 mi. British Hollow-Potosi Rd., S.T. Hy. 133, Proj. T 0204 (1), Contr. 2, Grant Co., $183,868***to Arthur J. Pagel, Almond, grading, draining 4.003 mi. West Co. Line-Arkdale, S.T.H. 13 Rd., S.T. Hy 21, Proj. T 0500 (3), Contr. 1, Adams Co., $65,517. Grand total $2,676,448. Bids 4/4. CD 3/15.

Ont., Toronto—Municipality, c. conc. Clifton Rd. exten., own forces, $60,000. M. Sewart, city engr. CD 4/26/46.

EARTHWORK, WATERWAYS

BIDS ASKED

† Minnesota and North Dakota—B.A. After 4/14—U. S. Eng., 1217 U.S.P.O. and Custom House, St. Paul, 1, Minn., deepen, w'd'n, straighten approx. 32 mi. channel and ditch on Mustinka River, Mustinka State Ditch, Five Mile Creek and Co. Ditch 42, in Red River of North Drainage Basin, incl. approx. 2,900,000 cu. yd. excav., riprap protection under bridges, etc., clearing, snagging 7 mi. reach of Twelve Mile Creek. Extended date. CD 12/30.

† Illinois—B.A. 4/25—U. S. Eng., P. O. Box 97, Memphis 1, Tenn., construct Sect. 2 Item R-0-0 A, C. Cairo, Illinois Floodwall Imprvs., along Ohio River Front in Cairo, Ill., and exten. downstream to junction with levee, Alexander Co., Serial No. CIVENG 40-041-50-218. CD 8/31/44.

† New York—B.A. 4/25—U. S. Eng., 80 Lafayette St., New York, Zone 13, flood control project, Ramapo River, Suffern.

† Ohio—B.A. 4/25—U. S. Eng., Madison Ave. and 8 St., W. Huntington 18, W. Va., raising levee, Levee Project on Works, Zone Dover Reservoir Proj., Serial No. CIVENG 46-022-50-84. CD 2/28.

† Arkansas—B. A. 4/26—U. S. Eng., 300 Broadway, Little Rock, approx. 1,300 lin. ft. pile dikes and approx. 21,400 lin. ft. revetment, Arkansas River Watershed, Arkansas River, Serial No. CIVENG 03-050-50-67. CD 12/24/43.

† Iowa—B.A. 4/26—Soil Conservation Service, 434 N. Pinkerton Ave., Milwaukee, Wis., flood control works on Croy Minor Watershed in Little Sioux Basin, near Turin, Monona Co.

† Michigan—B. A. 4/26—U. S. Eng., 607 Federal Bldg., Detroit, Zone 31, excav. flood channel, lower section Red Run, from vicinity of Warren to downstream end of Red Run, Macomb Co., CIVENG 20-064-50-71.

† Oregon—B.A. 4/26—U. S. Eng., Pittock Block, Portland, Zone 5, design, fabrication, erection 20,000 gal. elevated steel water tank on concrete footings at Bonneville Dam. CIVENG 35-026-50-304.

† Pennsylvania—B.A. On Or About 4/27—U. S. Eng., 121 N. Broad St., Phila., retaining embankments and drainage structures for dredge-spoil disposal area, along west bank of the Schuylkill River approx. 1,600 ft. to 3,500 ft. downstream from Pennsylvania R. R. (Trenton cut off) Bridge at Bridesburg, and between river bank and Reading Co. railroad right-of-way, near Swedeland.

† Kentucky—B.A. 4/27—U. S. Eng., P.O. Box 59, Louisville, Zone 1, flood protection wks., Hawesville, Ohio River Basin, Hancock, Co., located on left bank of Ohio River, approx. 724 mi. below Pittsburgh, Pa., beginning on east side of Clay St. approx. 200 ft. north of Main St. extending north to and across L.&N.R.R., thence downstream between L.&N.R.R. and Ohio River to vicinity of Lead Creek thence upstream near right bank of Lead Creek, ending at U.S. Hy. 60, approx. 500 ft. west of inter-section of Harrison St. and Second Alley, encircling low portion of town on east, north and west sides. CIVENG 15-929-50-84. CD 3/27.

† Louisiana—B.A. 4/27—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, excav. and precast concrete piling for gated portion of Morganza Control Structure located along right bank of Mississippi River in Pointe Coupee Parish, about 3 mi. northwest of Morganza, and about 35 mi. northwest of Baton Rouge. CIVENG 16-047-50-226.

Ark., Helena—B.A. 4/28—Beaver Bayou Drainage Dist., Solomon Bldg., excavating approx. 105,000 cu. yd. grubbing, clearing approx. 58 acres right-of-way in Ditch 3, located 1 mi. south of Oneida approx. 5.3 mi. work. CD 11/28.

† Louisiana—B.A. 4/24—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, channel imprvs., Selser's Creek, Tangipahoa Parish, clearing and snagging Mile 0.00 to Mile 4.5. CIVENG 16-047-50-237.

† Texas—B.A. 4/25—U. S. Eng., foot of Prytania St., New Orleans 9, La., channel imprvt., Lamar Co., Caney Creek, Mile 1.37 to Mile 5.45 and Denton Creek Mile 0.00 to Mile 0.70, Serial No. CIVENG 16-047-50-230.

† Okinawa—B.A. On Or About 5/1—U. S. Eng. APO 331, San Francisco, Calif., removing obstructions, drag Naha Harbor bottom, locate and remove underwater obstacles, remove approx. 700 lin. ft. steel sheet pile bulkhead, remove approx. 1,400 lin. ft. masonry bulkhead, land excav. removing approx. 10 ft. overburden from designated areas, approx. 100,000 cu. yd. excav. incl. removal of concrete

pavements; preparation for dredging; effect minor repairs to dredge; assemble dredge pontoon line and construct initial shore line; construct initial levees and spillways; dredge Naha Harbor and other areas to project depth (max mum is 34 ft); depositing the dredged material in disposal areas to established grades, approx. 1,200,000 cu. yds., Ryukyu Islands.

La., New Iberia—B.A. 5/1—City, City Hall, Pkg. N. I.C., 8-50, dredging 1,600 ft canal on New Iberia-Commercial Canal Port Authority. Plans depot $5; John M. Rochel, city engr.

† Michigan—B.A. after 5/1—U. S. Eng., 609 Federal Bldg., Detroit. Zone 32, maintenance dredging, Saginaw River, extend from mouth of River at Essexville to Pere Marquette R. R. Bridge in Saginaw. Plans depost $10.

† South Carolina—B.A. On Or About 5/2—U. S. Eng., P. O. Box 905, Charleston, construction present Shipyard River, extend 10 ft depth to width of existing 20 ft. channel in Shipyard River at Charleston, CIVENG 38-082-50-18.

† California—B.A. 5/2—U. S. Eng., 751 S. Figueroa St., Los Angeles. 3,556 ft rect. rein-conc channel fill for wide Seattle-Westlake System, Washington Pl. to Charnock Rd. $100,000-$1,000,000. CD 1-25-45.

† Mississippi—B.A. 5/2—U.S. Eng., P.O. Box 60, Vicksburg, drilling water wells in Sunflower and Arkabutla Reservoir Areas, located on Government Reservation at Harris Landing, Hays Landing, Dratts Crossing, Hy. 7 Crossing, Horn Lake Landing, Countown Crossing, on Sardis Reservoir, in Panola and Lafayette Counties, at Kerrys Crossing and Pleasant Hill on Arkabutla Reservoir, in Tate and Tunica Counties. CIVENG 72-80-50-146.

† Oregon—B.A. 5/2—Bureau Reclamation, Dpt. Interior, Berg, Northwest and Structures, M-58 Waterway, Deschutes Proj., approx. 5 mi. northeast of Madras. Spec. No. R1-78.

† Tennessee—B.A. 5/2—U. S. Eng., P.O. Box 97, Memphis. Zone 1, clearing, grubbing approx. 244 mi. below west end of Memphis and Arkansas Bridge, clearing approx. 50 acres, grubbing approx. 44 acres of same area on Government owned land adjacent to the left bank of Mississippi River, Mile 726 AHPI. Serial No. CIVENG 40-121-50-156.

† Washington—B.A. 5/2—U. S. Eng., 4735 E. Marginal Way, Seattle. Zone 4, excavation for north bank protection, clean-up, reshaping and place impervious blanket for Chief Joseph Dam, to specs., CIVENG-45-108-50-7. CD 1-25-44.

† California—B.A. 5/4—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Walnut Grove, Calif., site for Delta Cross Channel, flood gate structure, Delta Division, Central Valley Proj., Spec. 2997-E, N. McClellan, ch. engr.

LOW BIDDERS

† Florida—U. S. Eng., P. O. Box 4970, Jacksonville, Apr. 4, rebuilding, repairing south jetty and revetment entrance to Lake Worth Inlet to Palm Beach Harbor, Div. N. CIVENG-08-125-50-6, from Powell Brothers Inc., Fort Lauderdale, $201,960. Est. $241,000. CD 3/28.

† Kentucky—U. S. Eng., 830 W. Broadway, Louisville, Zone 3, Apr. 4, 3 pump plant structures, incl. pumping houses, sewer intakes, (2) pump units, pumps, 3 sewage pumps, facilities, Civil Works Proj. Serial No. CIVENG-23-030-50-6, Anderson Co., Cincinnati, $428,400. Est. $464,000. CD 2/24.

† Louisiana—U. S. Eng., foot of Prytania St., New Orleans. Zone 9, rehabilitate Main Post quarters office bldgs., remodeling frame field office bldg., appurtenances, Div. 50-212, L.B. $114,473. CD 3/20, under LB.

La., Donaldsville—American Parish Police Jury, Apr. 4, 223,400 cu. yd. channel excav., East Bayou Conchatta Gravity Drainage Dist., from Mississippi & Ostarly, 340 Brooklyn Ave., New Orleans. $33,152. CD 3/21.

† Nebraska—U. S. Eng., 1709 Jackson St., Omaha. Zone 2, Apr. 5, extra contract for Omaha flood wall and Monroe Loop sewer, Serial No. CIVENG 23-039-50-122, from Omaha Douglas Co., Cunningham Kraft Co., Omaha Nati. Bank Bldg., Omaha. $164,745. Est. $178,979. CD 3/13.

† New Jersey—U. S. Eng., 80 Lafayette St., New York, N.Y., rejected bids Manasquan Inlet, Monmouth County, Serial No. CIVENG 30-070-50-6, readvertise. CD 3/2.

† Wisconsin—U. S. Eng., 1217 Post Office and Custom House, St. Paul 1. Minn. Apr. 4, extend upper guide wall at Lock and Dam 4, Mississippi River, Trempealeau, from McCarthy Improv. Co., 602 Kirk Bldg., Davenport, Ia. Bid 1, without precast concrete, $293,095. from Ira Cross Engineering Co., 310 Michigan Ave., Chicago, Ill. Bid 2, with precast concrete, $363,444.

† Wyoming—Bureau Reclamation, Dpt. Interior, Torrington, cancelled bids to fuel-test diesel Mar. 30, steel structure, Fort Laramie Canal Mile 101.6 near Veteran, North Platte Proj., Spec. R-1119, Region 7, L. N. McClellan, ch. engr. CD 3/22.

† Alaska—U. S. Eng., AP. 942, A.P.O. FM, Seattle, Wash., Anchorage, marine floor & piling for warehouse at Seward, wharf, approx. 4 mi. northeast of Kenai, from M. P. Mueller Co., Leone Bldg., Seattle, Wash., Zone 1. $209,952. CD 3/15.

CONTRACTS AWARDED

† California—U. S. Eng., 751 S. Figueroa St., Los Angeles, channel improv., Coastal Parkway system, Brassuck Dr. to Washington Pl., Los Angeles, Los Angeles Co., CIVENG-04-343-50-21, to Webb & White, 4719 Melrose Ave., Los Angeles, $775,148. Bids 2/10, awarded 3/6. CD 2/17, under LB.

▲† Massachusetts—U. S. Eng., Army Base, Boston, Zone 10, dredging, Fall River Harbor, Bristol Co., CIVENG 10-016-50-37, to Gahagan Constr. Co., 90 Broad St., New York, N. Y., $1,193,500. Bids 3/23, awarded 3/31. CD 4/4, under LB.

▲† New York—U. S. Eng., 80 Lafayette St., Zone 13, dredging approx. 1,754,900 cu. yd. material except solue rock from Hudson River Channel, CIVENG 30-070-50-62, incl. Upper and Inner Pilot, Bids 3/16 rejected, L.B. $1,215,875. CD 2/23, under LB.

† Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, dredging Houston Ship Channel, Chambers Co. CIVENG 42-243-50-166, to Bauer-Smith Dredging Co., Inc., Port Lavaca, $530,700. Bids 2/28, awarded 3/24. CD 3/8, under LB.

† Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, dredging, Gulf Intracoastal Waterway, Cameron Co., Serial No. CIVENG 41-243-50-114, to Bauer-Smith Dredging Co., P. O. Box 88, Port Lavaca, $666,168. Bids 3/1. CD 3/8, under LB.

▲† Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, Trinity River and tributaries, texas, spillway and constructing east portion embankment, Garza-Little Elm Dam and Reservoir Proj., near Lewisville, Denton Co., Inv. No. CIVENG 41-243-50-107, to T. C. Coile & Dean Skinner, P. O. Box 4057, Austin, $2,002,961. Bids 1/12. CD 1/25, under LB.

AIRPORTS

BIDS ASKED

† Ga., Marietta—CONTROL TOWER—B.A. 4/26—U. S. Eng., Post Office Bldg., Savannah, Control Tower Marietta Air Force Base, Serial No. ENG-09-143-50-48. CD 3/15.

† Wash., Whidbey Island—HANGAR REPAIRS—B.A. 4/27—Pub. Wks. Officer, U. S. Naval Air Sta., W. Wheeler St., Seattle, Zone 5, for repairs to Hangar No. 3, U. S. Naval Air Station, Specs. 12,447. CD 3/24-45.

▲ Wis., Milwaukee—AIRPORT—B.A. 4/27—Milwaukee Co., Courthouse, General Mitchell Field Airport, incl. grading, draining, storm sewers, railway w.k., etc., total cost construction etc., $1,000,000. Plans expected $20. Thomas Gorgoza, airport engr., CD 11-19-46.

† Fla., Tampa—CONTROL TOWER—B.A. 4/28—U. S. Eng., Post Office Bldg., Savannah, Ga., control tower at MacDill Air Force Base. Plans deposit $10. CD 3/15.

† Ga., Augusta—INSTRUMENT LANDING SYSTEM—B.A. 4/28—Civil Aeronautics Admin., 2nd Region, 84 Marietta St. N. W., Atlanta, Instrument Landing System at Bush Field.

† Ga., Marietta—CONTROL TOWER—B.A. 4/28—U. S. Eng., Post Office Bldg., Savannah, control tower at Marietta Air Force Base, Extended date. CD 3/10.

Ind., Ft. Wayne—TERMINAL BLDG.—B.A. About 5/1—Dt. Aviation Comm., Ft. Wayne, stone, brick, air terminal bldg. on north side of field (exc. present terminal bldg. at Baer Field. $400,000. CD 10-4-49.

† Alaska, Homer—APARTMENT—B.A. 5/1—Civil Aeronautics Admin., Box 440, Anchorage, WAC Bldg.

† Alaska, Kenai—APARTMENT—B.A. 5/1—Civil Aeronautics Admin., Anchorage, 5 unit apartment with sewerage sys., concrete walkway and connecting to existing Kenai electric sys.

† Alaska, McGrath—APARTMENT—B.A. 5/1—Civil Aeronautics Admin., Box 340, Anchorage, 5 unit apartment with well and water supply sys. and connection to existing electric system, sewage, steam and fuel supply lines.

† Wash., Spokane—WATER SUPPLY LINE, etc.—B.A. 5/1—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 40,000 lin. ft. 12 and 16 in. water supply line and 75,000 ft. distr. piping up to 14 in. at Spokane Air Force Base, Proj. 45-108-50-79, Col. E. C. Stoiber, engr.

LOW BIDDERS

Ariz., Phoenix—CONTROL TOWER—City, First Ave. and Adams Sts., Apr. 4, control tower, Sky Harbor Airport, from Wardair Constr. Co., Bids 3/21, $94,488.

† Calif., Point Mugu—AIR BLAST FACILITY—Navy & Bureau Aeros, Navy Dpt., Arlington, Va., Mar. 29, air blast facility, Proj. Z-bldg., power plant, etc., at U. S. Naval Air Missile Test Center, Spec. 23667, from Del Amo Constr. Co., 2650 Cherry Ave., Long Beach, $821,225. CD 3/1.

N. C., Wilmington—ADMINISTRATION—New Hanover Co., Wilmington, Apr. 5, airport administration bldg., from Gurley Holland Co., Washington, $135,472. CD 3/21.

O., Cleveland—RUNWAYS—City, City Hall, Apr. 6, 2 runways, incl. some sewage and drainage at Cleveland Airport, by Lomaskin Concrete Co., 3400 Hubbard Rd., $490,242. Est. $540,000. CD 3/15.

† S. D., Rapid City—CONTROL TOWER—EXAFN (WCAC-Rapid City), 1,784 sq. ft., Ellsworth AFB, Natl., Mar. 24, control tower and radio trans. bldg., at Rapid City Air Force Base, Weaver Special No. 2, 644-50 & from Fuel Economy Eng. Co., 122 Lew York Bldg., St. Paul, Minn., $719,419. Est. $641,902. CD 3/8.

CONTRACTS AWARDED

Ga., Atlanta—RUNWAYS—and Fulton Co. Courthouse, paving 2 runways and taxiways, incidental work at new Fulton County Airport, (Fulton Co. Dr. Vo. to

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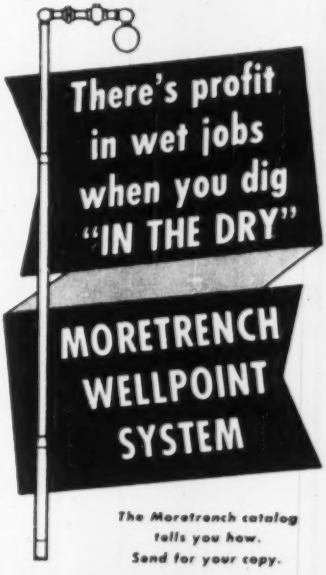

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† Mich., Selfridge Field—BARRACKS—U. S. Eng., 520 Merchandise Mart, Chicago, Ill.: masonry: concrete barracks, roads, utilities, Selfridge Air Force Base, to A. W. Kutsche & Co., 2924 W. Grand Blvd., Detroit. $524,140. CD 3/17, under LB.

PUBLIC BUILDINGS

BIDS ASKED

Ont., Long Branch—SCHOOL—B.A. 4/24—P. E. Leamon, 1554 Lake Shore Rd., brick, concrete school, Lake Shore Rd. for Separate School Bd., 1554 Lakeshore Rd.; Plans deposit $25. Brennan & Whale, 906 Yonge St., Toronto, archts. CD 12/15.

† Colo., Denver—LAUNDRY—B.A. 4/25—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C.: 136,000 cu. ft. Laundry Bldg. 7, for Veterans Administration Hospital.

▲ Conn., Hartford—HOUSING—B.A. 4/25—Housing Auth., 846 Asylum Ave., moderate rental housing Albany Av., $1,750,000. Plans deposit $50. Kane & Fairchild, 44 Pearl St., archts.

▲ Md., Hagerstown—HOSPITAL—B.A. 4/25—Washington Co. Hospital, King St., (selected list bidders) 7 story, 64x125 ft. wing, 3 story, 37x62 ft., and 42x152 ft. nurses home and educ. bldg.; brick, steel; $1,250,000. Buckler, Fenhagen, Meyer & Ayers, S. Paul and 24 Sts., Baltimore, Zone 18, archts. CD 5/16.

N. H., Dover—SCHOOL—B.A. 4/25—City, School Dpt., Dover, 2 story, brick school, gymnasium and auditorium; $875,000. J. J. O'Shaughnessy, 92 State St., Boston, Mass., arch. Clevedon-Varney Pike, 220 Tremont St., Boston, Mass., engrs. CD 2/28/46.

N. Y., New York—HOUSING—B.A. 4/25—New York City Housing Auth., 65 Park Row, Zone 7, Sect. II, foundations and general contract; heating and ventilating, electrical work, plumbing for Melrose Houses, Proj. N. Y. NYS-23, incl. Bldgs. Nos. 1, 2, 3 and 4 located in easterly portion of area bounded by E. 153 St., Courtland Ave., E. 154 St. and Morris Ave. and located in the easterly portion of area bounded generally by E. 155 St., Courtland Ave., E. 156 St., Park and Morris Aves.; Plans deposit $75, elevators, $25. CD 6/5/48.

N. Y., South Beach—SCHOOL—B.A. 4/25—Supt. School Bldgs., Design & Constr., 44 Flatbush Ave. extens., Brooklyn, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for new addn. to P. S. 46, Reid and Park, Staten Island; Plans deposit $50 general, $5 plumbing and drainage and electrical work and lighting fixtures, $5 heating and ventilating.

N. C., Chapel Hill—DORMITORY—B.A. 4/25—University of North Carolina, Gerrard Hall, Chapel Hill, 4 story H-shaped bldg., 2 wings approx. 41x818 ft. with connecting portion approx. 41x112 ft. mens dormitory. Plans deposit $25, general contract $10, heating, lighting and electrical work. George Watts Carr, 111 Corcoran St., Durham, archt. Wiley & Wilson, 905 Peoples Bldg., Lynchburg, Va., consult. engrs.

N. C., Edenton—HIGH SCHOOL—B.A. 4/25—At office John A. Holmes, supt. Edenton Graded Schools, Edenton; high school; Plans deposit $35 general, $20 mechanical work. Frank W. Benton, Wilson, archt.

Mich., Coldwater—NURSERY—B.A. 4/26, Mich. Dpt. Admin., 115 A State Office Bldg., Lansing, 2 unit, masonry, concrete, structural steel nursery for Coldwater State Home Training School; $864,000. Plans deposit $2, extended date. Harley, Ellington & Day, 3144 E. Outer Drive, Detroit, archts. CD 1/13/47.

Minn., Buffalo—HOSPITAL—B.A. 4/26—Village, A. F. Stafford, ex. 1 story, burnt, 40 bed municipal hospital; $300,000. Plans deposit $25. C. H. Buetow, 523 N. Sherling Ave., St. Paul, archt. CD 12/23/46.

N. Y., New York—LIBRARY—B.A. 4/26—Dpt. Pub. Wks., Municipal Bldg., Zone 7, general contract plumbing, heating and ventilating, electrical work and lighting for Bowne Branch Library at Bowne ave. between Dykeman and Academy Sts. Plans deposit $15. CD 8/20/45.

▲ Ont., Port Arthur—POST OFFICE, etc.—B.A. 4/26—Robert Fortier, acting secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.; post office, offices, dominion public bldg., $1,500,000. Plans deposit $100. G. Brook, Toronto, archt. CD 12/24/46.

Que., Bouchard—HEATING, HEATING PLANT, etc.—B.A. 4/26—J. D. McCarthy, secy., Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., replacement of Heeching, Heating Plant and Power House No. 34, A.U., Tender 5-2-8-22-21. Approx. $50,000. Plans at office.

▲ Que., Valcartier—ARMAMENT RESEARCH, etc.—B.A. 4/26—J. D. McCarthy, 70 Lyon St., Ottawa, Ont., armament research and development bldgs., branch of Dpt. National Defense, for Govt. of Canada Ottawa, Ont., Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., engr.

Minn., Petal—SCHOOL—B.A. 4/27—East Forest Special Indep. Dist. School Dist., 424 E. 1 Waverley, archt., Wm. Bidg., Jackson School High School. Plans deposit $25. CD 6/22.

N. C., Chapel Hill—DORMITORY—B.A. 4/27—University of North Carolina, W. D. Carmichael Jr., consltg. engr., Gerard Hall, 4 story, dormit. men's dormitory. Extended date. Plans deposit $25, general, $10, heating, lighting and electrical work. George Watts Carr, 111 Corcoran St., Durham, archt. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, Va., consult. engrs. CD 3/24.

Tex., Big Spring—HIGH SCHOOL, etc.—B.A. 4/27—Big Spring Independent School Dist., Big Spring, Senior High School, $650,000, gymnasium, auditorium, vocational, $250,000. Plans deposit $30 each general, $20 each mechanical work. Puckett & French, 505 Petroleum Bldg., archts. CD 3/20.

Tex., Big Spring—ADMINISTRATION, etc.—B.A. 4/27—Howard County Junior College, Big Spring administration and auditorium, $275,000, auditorium and gymnasium, $250,000. Plans deposit $30 each general, $20 each mechanical work. Puckett & French, 505 Petroleum Bldg., archts. CD 12/14.

† Wash., Anchorage—HOUSES—B.A. 4/27—U. S. Eng., Anchorage, fifty 8-family row house at Ft. Richardson, 595-507-50-9. Plans deposit $50.

† Alaska, Fort Richardson—HOUSES—B. A. 4/27—U. S. Eng. (API) 442, c/o PM, Seattle, Wash., Anchorage, approx. fifty 8-family row-type houses Inv. No. 595-507-50-9. Plans deposit $50.

Calif., Petaluma—SCHOOL—B.A. 4/28—Petaluma Elementary School Dist., Petaluma, wood frame, 11 classroom McNear School, $254,000. Plans deposit $50. Robert Stanton & Chester R. Phillips, Box 2117 Carmel, archts. CD 6/26.

Mass., Springfield—SCHOOL—B.A. 4/28—City, Pub. Bldgs. Dpt., City Hall, 2 story, burnt, brick, stee school, East Union St., $250,000. Plans deposit $50. Morris W. Mallory, 220 Dwight St., archt.

Tex., Huntsville—MUSIC and FIELD HOUSE—B.A. 4/28—Sam Houston State Teachers College, Huntsville, music and field house, $300,000. Wirtz, Calhoun & Tungate, 500 Stuart St., Houston, archts. W. P. Moore, 4603 Montrose Blvd. and H. U. Bible, 500 Stuart St., both Houston, engrs. CD 6/27.

▲ Wash., Pullman—DORMITORY—B.A. 4/28—Washington State College, Pullman, women's dormitory, $1,500,000. P. Thiry, 800 Columbia St., Seattle, archt. CD 1/13.

† Okinawa, Ryukyus Islands—BARRACKS—B. A. On Or About 4 24—U. S. Eng. APO 331, San Francisco, Calif., 6 two story, 40x310 ft. rein.-con. barracks, incl. outside utilities, 50 family type 3-bedroom masonry block houses.

Ala., Vernon—HOSPITAL—B.A. About 5/1—Lamar Co. Hospital, $350,000. William L. Rosamond, Columbus, Miss., archt. CD 12/9/46.

† N. M., Moriarty—TRAINING CAMP SITE—B.A. About 5/1—U. S. Eng., P. O. Box 1539, Albuquerque, training camp site, Serial No. Eng 29-005-50-37.

Calif., Modesto—SCHOOL—B.A. 5/1—Modesto City School Dist., Modesto, frame, stucco, brick Roosevelt School, $600,000. Plans deposit $50. Fred L. Swartz & Wm. G. Hyberg, Rowell Bldg., Fresno, archts. F. W. Kerkeng, 320 Market St., San Francisco engr. CD 2/15.

Ill., Madison—SCHOOL—B.A. 5/1—Bd. Educ., School Dist. 127 of Madison Co., H. D. McCann, supt. Schools, c/o Harris School, 6 and Alton Sts., 2 story, burnt, 91 x 93 ft., 55 x 222 ft., and 95 x 128 ft., brick, concrete high school irregular shape incl. auditorium-gymnasium, cafeteria, shower rooms, science, commercial, domestic science, mechanical arts and classrooms, offices, kitchen, cafeteria, library, etc. $700,000. Wm. B. Ittner, Inc., 911 Locust St., St. Louis 1, Mo., archts. CD 12/12.

Tex., Donna—SCHOOL—B.A. 5/2—Donna Independent School Dist., Donna, school, $250,000. R. Newell Waters, 1st Natl. Bank Bldg., Weslaco, archts. CD 3/17.

† Washington—BUS STRUCTURES, etc.—B.A. 5/2—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Odair, Wash., bus structures, transformers, disconnecting switches and generator-protective equip. for Grand Coulee Power House Third Supplemental Addn. Proj., Spec. 2984. L. N. Mulligan, chf. engr.

▲† Calif., San Francisco—HOSPITAL—B.A. 5/3—General Services Admin., Public Bldgs. Service, Wash., D. C., U. S. Marine Hospital exten., remodeling, Proj. No. 4-113-SA-AE, $3,500,000. Extended date CD 1/19.

▲† T. H., Oahu, Wahiawa—BUILDINGS—B.A. 5/5—At office C. W. Porter, Lcdr., CEC, USN, Officer in Charge of Construction, Annex 1 C Administration Bldg., Naval Supply Depot, Pearl Harbor; general terminal facility, bldgs. at Navy Communication Station, NOY 28953, Spec. No. 22727. Approx. $1,000,000. Plans deposit $110.

LOW BIDDERS

▲ Calif., Ceres—HOSPITAL—Stanislaus County Memorial Hospital Assn., 910 11 St., Modesto, Mar. 20, 2 story, H-shaped, 100 bed rein.-con. hospital, from 1500 block 82nd, San Leandro St., Oakland, $1,055,678. CD 3/16.

▲ Calif., Richmond—SCHOOL—Richmond Union High School Dist., 1108 Bissell St., Mar. 30, reinstcon. El Cerrito Junior High School, from Swinerton & Walberg, 225 Bush St., San Francisco, $2,568,000. CD 3/9.

▲ Conn., New Britain—HOUSING—City of New Britain Housing Auth., C. Sczepanik chn., 16 Armistice St., Mar. 28, 180 family unit housing, Corbin Ave., from Fusco, Amstruda Co., 59 Amity Rd., New Haven, $1,715,000. CD 3/10.

▲ Conn., Hartford—HOUSING—City of Hartford Housing Auth., 846 Asylum Ave., Mar. 31, 148 family units, Rice Heights Proj., MR-5A, Flatbush Ave., from Anderson-Kay Oaks Constr. Co., 141 S. Marshall St. $1,250,000. CD 4/21.

Conn., Newington—SCHOOL—Town School Bldg. Comm., Charles Sherwood, chm., 2 story, basmt., brick, steel high school. Cedar St., from Washburn & May Co., 15 Lewis St., Hartford. $805,140. CD 3/21.

Conn., Wallingford—HOUSING—Bord. of Wallingford Housing Auth., Wallingford, rejected bids Mar. 21, 65 family units. Proj. MR 51. Ulrich Heights. L.B. $859,888. Will re-advertise. CD 3/29; under LB.

▲ Kan., Great Bend—SCHOOL—Ed. Educ., Mar. 29, general contract high school, from Dondlinger & Son, 1206 E. Lincoln St., Wichita. $1,170,245. CD 2/23.

▲ Kan., Salina—SCHOOL—Ed. Educ., Mar. 5/24, general contract high school, from Geo. J. Bauman, Nevada, Mo., and Val Borden, Salina. $1,433,200. CD 3/22.

Mass., Greenfield—HOSPITAL—Franklin Co. Pub. Hospital, High St., Mar. 24, hospital addns., alterations, High St., from C. D. Purington Co., 171 Worcester St., Providence, R. I. $809,450. CD 3/7.

Mass., Malden—HOUSING—Town of Malden Housing Auth., Malden, Mar. 31, veteran housing, Proj. No. 200-2, Hunting Field, from W. Sittenauer & Son, 194 North St., Salem. $797,345. CD 3/29.

Mass., Weymouth—SCHOOL—Town Supt. Schools, 83 Middle St., Nov. 21, 2 story, basmt., brick, steel, concrete, Junior High School, Park and Pleasant sts., from Foss Bros. Constr. Co., 10 Colonial Ave., Newtonville. $990,900. CD 2/16.

Mich., Northville—ADMINISTRATION—State Bur. Admin., Div. 11-A, State Office Bldg., Lansing, Mar. 14, general contract masonry, reinforced, administration bldg., section of Clinical Hospital Unit, Northville State Hospital, from W. Burke Co., 1032 Ford Bldg., Detroit. $959,750. CD 3/15.

Minn., Duluth—SCHOOL—Ed. Educ., H. J. Forsberg, chm., Apr. 5, general contract high school, Arthur Upham Klopper Hotel Co., 409 First National Bank Bldg., $521,246. CD 3/22.

▲ N. Y., Farmingdale—INDUSTRIAL and TECHNICAL—Bureau Cont. uits & Accounts, Albany, Mar. 29, industrial and technical bldg. at Long Island Agricultural & Technical Institute, from Ambersley Constr. Co., 145 Hempstead Turnpike, Elmont. $1,609,305. CD 3/23.

N. C., Asheville—HOUSING—Asheville Housing Auth., c/o Lex Alexander, Jr., archt., Box 1960, Apr. 5, slum clearance housing, from Lawrence Constr. Co., 12 State St., Charleston, S. C. $558,865. CD 3/24.

▲ N. C., Concord—HOSPITAL—Bd. Trustees Cabarrus County Hospital, C. A. Cannon, chm., Concord, Mar. 28, general contract, 120 bed hospital addn., from J. A. Jones Constr. Co., 209 W. 4 St., Charlotte. $1,348,700. CD 3/2.

N. C., Goldsboro—HOSPITAL—Wayne Memorial Hospital, Inc., Inc., Inning, chm., Goldsboro, Apr. 4, general contract, 100 bed hospital addn., from J. A. Jones, from T. A. Loving & Co., Bank of Wayne Bldg., $551,776. CD 3/14.

N. C., Graham—HIGH SCHOOL—Alamance Co. Bd. Educ., Graham, Mar. 30, general contract high school, from Piedmont Constr. Co., Statesville. $544,000. Alex. Jones & Son, architects, Statesville. Previously reported under W. Scott Jones, Jr., Statesville. L. Story Bldg., Elevator, Heating, Plumbing, from Hunt Constr. Co., Durham. $400,930. CD 2/17.

▲ Pa., Hollidaysburg—HOSPITAL—General State Auth., 18 and Herr Sts., Harrisburg, general contr. hospital, Hollidaysburg, from Geo. A. Fuller Co., 1628 W. Thompson St., Phila. $1,036,000. CD 3/20.

▲ Va., Charlottesville—ACADEMIC—State of Virginia, Richmond, academic bldg. at University of Virginia, from Wise Constr. Co., 2 and Grace Sts., Richmond. Base Bid 1, $1,072,900. Base Bid 2, $1,069,700. Alt. $1,022,900. CD 3/15.

† Wash., Ephrata—OFFICE—Bureau Reclamation, Dpt. Interior, Ephrata, Mar. 30, construct Ephrata Office, Columbia Basin Proj., Steel Proj., from Walter W. Hoffman Co., 1200 Exchange Bldg., Seattle, Wash. $472,192. CD 2/24.

† Wis., Elkhorn—HARBARK, less 4-40, S. Eng., 222 W. North Bank St., Chicago, Ill., Apr. 4, bascule and misc. bridge, Walworth Co., Sec. 140-1-0, E. 3 Elem. Sch., Janesville. $819,828. CD 3/6.

Wyo., Cheyenne—OFFICE—State Capitol Bldg., Cheyenne, Mar. 30, 4 story, 16,600 sq. ft. state office bldg., Rawlins, Lower Colo. R. D. Box 762, Proj. $916,100. CD 2/2.

▲† Alaska, Nome—BOARDING SCHOOL—Comr. Indian Affairs, Dept. Interior, Federal Bldg., 19 and C Sts., Wash., D.C., Mar. 31, Nome Boarding School, from Bergren Bros., Box 924, Tacoma, Wash. $1,345,000. CD 2/24.

B. C., Vancouver—SCHOOL—Vancouver School Bd., 1580 Howe St., Vancouver, general contr. Lord Byng High School addn., from Smith Bros. & Wilson Ltd., 1267 Richards St. $862,080. CD 3/17/49.

▲ N. S., Cole Harbor—HOSPITAL—County Hospital Bd., Halifax, Mar. 24, 200 bed Nova Scotia Hospital, from Foundation Maritime Ltd., 175 Lower Water St., Halifax. $779,475. CD 3/10.

Ont., Tillsonburg—HOSPITAL—W. N. Tillsonburg District Memorial Hospital, Tillsonburg, Mar. 28, 1 and 2 story, 38 x 140 ft. and 58 x 140 ft. brick, steel, addn. to hospital, Ralph St., from Underpinning & Foundation Co. of Ontario, Ltd., 428 Richmond St., London, Ont. Approx. $450,000. CD 2/28.

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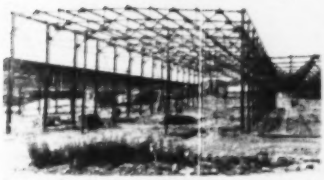

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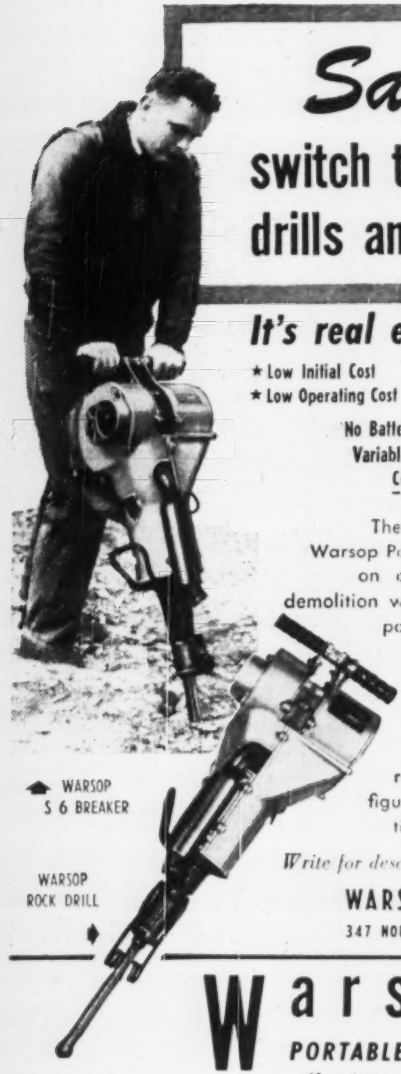

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CONTRACTS AWARDED

▲† Ala., Muscle Shoals—GAS REFORMING UNITS—Tennessee Valley Auth., New Sprankle Bldg., Knoxville, Tenn.; gas reforming units to permit manufacture of ammonia by use of natural gas, to Chemical Constr. Corp., Empire State Bldg., New York 1, N. Y., $1,300,000.

▲ Calif., Berkeley—CLASSROOM etc.—Bd. Regents University of California, general contract rein.-con. classroom and office, classroom portion 3 and 4 story, office portion 4 and 5 story, to Barrett & Hilp, 416 Harrison St., San Francisco, $2,015,957. Bids 3/17, CD 3/23, under LB.

Calif., Ceres—HOSPITAL—Stanislaus County Memorial Hospital Assn., 910 11 St., Modesto, 2 story L-shaped, 106 bed, rein.-con. hospital, to Stolte, Inc., 8451 San Leandro St., Oakland, $972,035. Bids 3/20, CD 4/4, under LB.

▲ Conn., New Britain—HOUSING—City of New Britain Housing Auth., Edward Szczepanik, chm., 16 Armistice St., 160 family unit frame houses, Corbin Ave., to Fusco Amatruda Constr. Co., 59 Amitz Rd., New Haven, $1,751,000. Bids 3/28, CD 4/4, under LB.

▲ Conn., Norwalk—HOUSING—City of Norwalk Housing Auth., John Cavanaugh, acting chm., 244 family units, 44 brick, frame bldgs., Housing MR-27, Schreiner Ave., to Frounce Constr. Co., Inc., 74 Goodsell St., Bridgeport, $1,637,000. Bids 3/14, CD 3/20, under LB.

▲ Conn., Norwich—HOUSING—City of Norwich Housing Auth., W. B. Barrett, chm., 118 two story, bsmt., family unit garden apartments, Hillside Terrace and Hamilton Ave., to Key Constr. Co., 224 Ridgefield St., Hartford, $1,064,000. Bids 3/14, CD 3/14, under LB.

▲ Conn., Willimantic—HOUSING—City of Willimantic Housing Auth., J. J. Ashton, chm., Hurrington Ave., 80 family units, Ash and High Sts., MR-14, to Wexler Constr. Co., 2 Elm Pl., Brookline, Mass., $707,800. Bids 3/31, CD 3/30, under LB.

Fla., Panama City—SCHOOLS—Bay Co. Bd. Public Instruction, Panama City, Jinks and Springfield Junior High Schools, to Chapman Constr. Co., Dothan, $788,500. Bids 3/14, CD 3/21, under LB.

▲ Ga., Atlanta—HOUSING—U. S. Army, Atlanta General Depot, c/o Post Engr., Atlanta, 125 housing units at Atlanta General Depot, Conley, to J. A. Jones Constr. Co., Walton Bldg., Atlanta, $1,000,000. Contractor builds. Bids 1/31, CD 12/7.

La., Ruston—GYMNASIUM—State Bd. Educ., Capitol Bldg., Baton Rouge, gymnasium, campus of Louisiana Polytechnic Institute, to J. E. Rutcliff, P. O. Box 1441, Alexandria, $898,720. Bids 3/20, CD 3/27, under LB.

Mass., East Longmeadow—SCHOOL—Town, School Dist., 2 story, bsmt., Elementary and Junior High School, Prospect and Park Sts., to Construction Co., 221 East St., Springfield, $619,760. Bids 3/24, CD 4/7, under LB.

Mass., Malden—HOUSING—City, George Edward, chm., Malden Housing Auth., brick, State Aided Housing Proj., Malden 200-2, Huntings Field, to W. Sutrumski & Son, 194 North St., Salem, $797,345. Bids 3/31, C. F. Springall, 50 Park St., archt., CD 4/7, under LB.

† Mass., Truro—BUILDINGS, etc.—U. S. Eng., Army Base, South Boston, buildings, utilities, incl. water lines, electric and sewer mains, CIVENG 19-016-50-23, to Bennett-Stewart Co., Inc., 104 Newbury St., Boston, $693,334. Bids 3/28, CD 4/7, under LB.

Minn., South St. Paul—SCHOOL—Bd. Educ., C. J. Lundberg, clk., general contract Junior High School, to Paul-Anderson Co., 940 Raymond Ave., St. Paul, $777,000. Bids 3/29, CD 3/31.

▲ Miss., Meridian—HOSPITAL, State Bldg. Comm., New Capitol Bldg., Jackson, 2 wards to house disturbed patients, East Mississippi State Mental Hospital, to L. B. Priester & Son, P. O. Box 869, $1,190,000. Bids 3/23, CD 2/10.

▲ N. J., Atlantic City—HOUSING—Atlantic City Housing Z311, Fairmount Ave., general contract, 164 unit Stanley Homes Village Housing, to John A. Johnson & Son, 270 41 St., Brooklyn, N. Y., $1,329,151. Bids 2/20, CD 2/28, under LB.

▲† N. M., Los Alamos—HOUSING—U. S. Atomic Energy Comm., Los Alamos, Group 14 Housing, Inv. 291-50-34, to Utah-Leavell, 1900 Wyoming St., El Paso, Tex., $2,668,767. Bids 3/30, CD 3/15.

▲ N. Y., Beacon—HOSPITAL, etc.—Bureau Contracts & Accounts, Albany, hospital bldgs. addns., alterations, Matteawan State Hospital, to Gens-Jarboe Inc., 101 Park Ave., New York, Zone 17, $1,176,745. Bids 3/1, CD 3/7, under LB.

† N. Y., Niagara Falls—BUILDINGS, etc.—U. S. Eng., 80 Lafayette St., New York 13, N. Y., misc. bldgs., utilities, near here, Serial No. Eng-30-075-50-40 to Arthur Venneri Co., 299 N. Broad St., Elizabeth, N. J., $778,449. Bids 2/28, CD 3/6, under Location Withheld, LB.

▲ N. C., Concord—HOSPITAL—Cabarrus Co., Concord Hospital, to J. A. Jones Constr. Co., 239 W. 4 St., Charlotte, $1,348,700. Bids 3/28, CD 3/31, under LB.

N. C., Greensboro—PHYSICAL EDUCATION—Woman's College, University of North Carolina, J. C. Lockhart, asst. controller, Greensboro, physical educ. bldg., addn., Southeastern Constr. Co., 205 E. Bland St., Charlotte, $558,881. Bids 4/4, CD 4/10, under LB.

Ore., Toledo—SCHOOL—Lincoln County School Dist., Toledo, construct grade and high school bldgs. at Newport, to Industrial Building Co., 940 Pacific Hy.

North Eugene. $423,800. Awarded 3/28. Annand, Kennedy & Boone, Central Bldg., Portland, archts. CD 6/30.

S. C., Spartanburg—AUDITORIUM—The Spartanburg Auditorium Comm., c/o contractor, Memorial Auditorium, to General Constr. Co., Palmetto Bldg., Columbia. $850,000. Bids 3/6. CD 3/13. under LB.

Tenn., Nashville—SCHOOL—State of Tennessee, Nashville, 9 bldgs. at State School for Blind, to Rock City Constr. Co., 135 4 Ave. N. $1,701,843. Bids 3/14, awarded 4/6. CD 3/22, under LB.

▲ Va., Charlottesville—ACADEMIC—State of Virginia, Richmond, academic bldg. at University of Virginia, to Wise Contg. Co., 8 and Grace Sts., Richmond, $1,067,482. Bids 3/29. CD 4/5, under LB.

Va., Newport News—HIGH SCHOOL—City of Newport News, Huntington High School alterations, addns., Orcutt Ave. to Virginia Eng. Co., Newport News, $415,300. Williams, Gore & Blanchard, 403 Mercury Bldg., archts. Bids 4/3. CD 3/10, under LB.

Ont., Kingston—COMMUNITY HEALTH, etc.—Municipality, 193 x 303 ft., concrete, steel 4,000 capacity community health and recreation centre at Exhibition field, to M. Sullivan & Son, Ltd., 445 Montreal Rd., Kingston, $417,366, on revised plans. CD 8/30, under LB.

Ont., Peterborough—CITY HALL—City, E. A. Outram, C.A., 2 story, bsmt., structural steel city hall, George St. to Eastwood Constr. Co., P. O. Box 796, Peterborough. Approx. $643,962. Bids 4/5. CD 3/14.

Ont., Sudbury—COMMUNITY ARENA—City, H. P. McKeown, clk., 26'x284 ft., community arena, on Lorne Central School property, to Hill-Clark-Francis Ltd., 68 Lorne St., Approx. $662,750. CD 4/4, under LB.

Que., Montreal North—HOUSING—Central Mortgage & Housing Corp., 1247 Guy St., Montreal, 204 dwelling units, Proj. 1-49-C to Massicotte & Careau Ltd., 3 Fusey St., Cap de la Madeleine, Approx. $950,000. CD 5/19/49.

COMMERCIAL BUILDINGS

BIDS ASKED

N. Y., Astoria—BANK—B.A. About 4/25—Astoria Federal Savings & Loan Assoc., 37-16 30 Ave., Long Island City, 2 story bank, 30 Ave. west of 38 St. CD 2/17.

N. S., Sydney—HOTEL—B.A. 4/26—R. S. Urquhart, 80 Whitney Ave., Isle Royal Hotel addn., Dorchester St. for Community. $50,000. CD 10/11.

Ala., Birmingham—OFFICE—B.A. 4/27—Closs-Sheffield Steel & Iron Co., c/o Van Keuren, Davis & Co., archts., Amer. Life Bldg., 27,000 sq. ft. office, Extended date. CD 2/24.

Ga., Atlanta—CHURCH—B.A. 4/28—Morningside Baptist Church c/o Thomas West Gardner, archt., Warner Bldg., Nashville, Tenn., church.

▲ Ill., Chicago—CHURCH, etc.—B.A. 5/1—Franciscan Fathers, 110 W. Madison St., Zone 2, 5 story, bsmt., steel, brick, concrete church and monastery, $1,000,000. Vitzthum & Burns, 1 N. LaSalle St., Zone 2, archts. CD 10/4.

La., New Orleans—HOTEL—B.A. 5/2—Weiss & Silverstein, archts., 611 Common St., 18 story Jung Hotel addn., for Jung Hotel, La Salle, Villere, Clive and Canal Sts. CD 8/18/48.

Miss., Greenville—CHURCH, etc.—B.A. 5/2—St. James Episcopal Church, c/o Wm. R. Burk, archt., 414 Pan American Bldg., New Orleans, La., church and educ. bldg. Plans deposit $25.

Mass., Belmont—SCHOOL—Bids Asked—St. Joseph's Parish, F. W. Cummings, pastor, 345 Waverly St., 4 story, bsmt. parochial school, Orchard and Common Sts. $500,000. Whelan & Westman, 2 Avalon St., Boston, archts. CD 12/22.

Mass., Williamstown—LABORATORIES—Bids Asked—Williams College, Dr. J. P. Baxter, pres., Williamstown, (selected list bidders) 4 story, bsmt., brick, steel, concrete physical and astronomy laboratory addn., alterations, $250,000; 1 and 4 story, bsmt., brick, steel, concrete biology laboratory, $500,000. Des Granges & Steffian, 161 Devonshire St., Boston, archts. CD 2/10.

Tex., Houston—TELEPHONE EXCHANGE—Bids Asked—Southwestern Bell Telephone Co., Axard and Jackson Sts., telephone addn. to recently completed bldg., Crown and Rosalshire Sts. $250,000.

SOON LETS CONTRACT

Calif., Merced—OFFICE—B. A. 4/14—Farmers Insurance Group, 4680 Wilshire Blvd., Los Angeles, soon lets contract 42,000 sq. ft., structural steel frame office and four 12 unit frame stucco apartments. Approx. $250,000. Walter Wagner, Thorington Bldg., Merced, archt. CD 9/2.

Fla., Coral Gables—STORE—The Coral Ponce Corp., 615 Lgo. E. Ponce Way, archt., 250 N. E. 18 St., Miami, soon lets contract 2 story, 120x190 ft. store and office. CD 1/19.

Fla., Miami Beach—HOTEL—Colgate Hotel Co., c/o Albert Anis, archt., 420 Lincoln Blvd., Penn House, Miami Beach, soon lets contract 4 and 5 story, 85x20 ft., 102 room hotel. CD 3/24.

Ga., Atlanta—APARTMENT UNITS—Burbizon Tower Apartments, c/o John W. Cherry, archt., Candler Bldg., soon lets contract 69 apartment units. CD 3/31.

Ill., Chicago—CONVENT—St. Timothy Parish, 6326 N. Washtenaw St., soon lets contract 3 story, 64x114 ft. brick, concrete, steel convent. Naess & Murphy, 60 E. Jackson St., archts.

La., New Orleans—SCHOOL—Bendernagel & Cazaie, archts., 8 Marlborough Gate, soon lets contract 3 story, resin con., brick, stone school, for St. Agnes Parochial School. 3420 Jefferson Hy.

Me., Portland—LIBRARY, etc.—Bd. Trustees, Westbrook Junior College, 716 Stevens Ave. soon lets contract library and classroom bldgs., $700,000. J. H. & J. C. Stevens, 187 Middle St., archts. CD 9/5/46.

Miss., Jackson—CHURCH—Galloway Memorial Methodist Church, c/o N. W. Overstreet & Assoc., archts., 201 N. Lamar St., soon lets contract church alterations, addns. CD 3/27.

Mont., Billings—HOTEL—Billings Investment Co., Billings, soon lets contract 4 story, 40x40 ft., resin con., brick Northern Hotel addn., to be built on southwest corner of main structure. $275,000. Dir Fleming & Assoc., Pratt Bldg., archts.

N. H., Keene—OFFICE—New England Mutual Life Insurance Co., 501 Boylston St., Boston, Mass., soon lets contract office bldg., West St. Approx. $500,000. Peerless Casualty Co., 19 Federal St., Jessee, Cram & Ferguson, 248 Boylston St., Boston, Mass., archts. CD 2/24.

N. C., Winston-Salem—OFFICE—Arista Mills Co., A. L. Butler, Jr., pres., Reynolds Bldg., soon lets contract office. Cyrill H. Pfohl, Winston-Salem, archt.

N. D., Grafton—HOSPITAL—St. Joseph Hospital, Grafton, soon lets contract hospital. $400,000. W. K. Kuker & Assoc., 1117 13 Ave. N., Fargo, archts.

N. D., Park River—HOSPITAL—Park River Hospital Ass'n., Park River, soon lets contract hospital. $100,000. W. F. Kuker & Assoc., 1117, 13 Ave. N., Fargo, archts.

O., Cleveland—DORMITORY—Case Institute of Technology, 10900 Euclid Ave., soon lets contract 3 story, bsmt., 60 x 270 ft., brick, stone, steel mens dormitory on campus ground. $400,000. Small, Smith & Reed, 709 Swetland Bldg., archts. CD 3/16.

O., Sandusky—HOSPITAL—Good Samaritan Hospital, Van Buren St., soon lets contract 2 story, bsmt., brick, steel hospital addn., remodeling. $500,000. Garfield Harris, Robson & Schafer, 1740 E. 12 St., Cleveland, archts. John Paul Jones, Carey & Miller, 1240 E. 12 St., Cleveland, mech. engrs. CD 8/23/46.

Pa., Midland—Office, United Steel Workers of America, Midland, soon lets contract Union Office. $250,000. R. F. Beatty, Potters Savings & Trust Bldg., East Liverpool, O. archt. CD 3/14.

▲ Pa., Pottsville—HOSPITAL—Pottsville Hospital, Jefferson St., soon lets contract hospital addn. $1,000,000. The Ballinger Co., 121 N. Broad St., Philadelphia, archt. CD 3/28.

Wash., Everett—HOSPITAL—Everett General Hospital, Everett, soon lets contract 3 story, bsmt., 42'x92 and 44 x 187 ft., resin con. hospital addn. $500,000. J. W. Maloney, Central Bldg., Seattle, Zone 4, archt. CD 3/20.

Wis., Chilton—SCHOOL, etc.—St. Rose Catholic Congregation, Chilton, soon lets contract 1 story, bsmt., 60x125 ft., steel, brick, block school and gymnasium. R. W. Surplice, Green Bay, archt.

Que., Kenogami—CHURCH—M. E. Lavoie, 192 Ste. Famille St., soon lets contract church and presbytery, Bridge St., for Roman Catholic Parish of Ste. Cecile Kenogami. $350,000. J. A. & A. Poulin, 71 Prospect St., Sherbrooke, archts. CD 3/31/48.

LOW BIDDERS

Calif., San Francisco—OFFICE—Benstars Realty 1361 Market St.—"cancelled" bids to have been opened Apr. 4, 2 story, mezzanine, reinforced concrete office addn. Approx. $250,000. Will re-advertise. CD 4/3.

Va., Bristol—HOSPITAL—King's Mountain Memorial Hospital, c/o Dent & Aydelett, archts., First Natl. Bank Bldg., Morristown, Tenn., hospital from Alley Constr. Co., Bristol, Tenn., $692,181. CD 3/8.

CONTRACTS AWARDED

▲ Calif., Hawthorne—DWELLINGS—Liberty Bldg. Co., 5254 120 St., Hawthorne, 272 frame, stucco dwell. Owner builds. $1,504,840.

Calif., Los Angeles—DWELLINGS—Bing & Bing, Inc., Canning Farms Inc., 9700 W. Pico Blvd., 117 frame, stucco dwellings on Sherman Way, Oak Park Ave., Amestoy Ave. to A. A. Moskowski, 9700 W. Pico Blvd. $674,600.

Calif., Los Angeles—MEDICAL—Pacific Projects, Inc., c/o Green & Kruckemeyer, archts., 8440 Santa Monica Blvd., Los Angeles, 4 story, 42,000 sq. ft. steel, concrete, med. bldg., Maryknoll Terr., to Wm. Moran Co., 1011 Vermont Ave., Alhambra. Approx. $700,000.

▲ Calif., Los Nietos—DWELLINGS—Anatel Corp., 945 N. La Cienega Blvd., Los Angeles, 209 frame, stucco dwellings, Workman, Studebaker and Flossmore Rds., to Gabriel Realty Corp., 945 N. La Cienega Blvd., Los Angeles. $1,080,680. Frank Green, 1515 Chevy Chase Dr., Glendale, archt.

Calif., Puente—DWELLINGS—C. D.-Tram, 5415 Whittier Blvd., Los Angeles, 48 frame, stucco dwellings, Duchesne St. and Mulender Ave. Owner builds. $250,000.

Conn., Danbury—COMMERCIAL—Tri Corner Realty Corp., Joseph Trister, pres., 272 Main St., 2 story, bsmt., 100x140 ft., brick, steel, concrete commercial bldg., Main and Elm Sts., to Arthur Cargiler Co., Fleetwood Ave., Bethel. Approx. $250,000. Paul Steinbach, 366 Atlantic St., Stamford, archt. CD 2/8.

Conn., East Hartford—HOUSING—Woody Crest, Inc., Arthur G. Woods, 1098 Main Ave., Windsor, 100 addtl. frame houses, Forbes St., Section. Owner builds. $900,000. Adolph Feinberg, 1127 Main St., Hartford, archt.

Conn., Meriden—HOSPITAL—Meriden Hospital, 181 Cook Ave., 2 story, brick, steel, concrete hospital addn., Cook Ave. to H. Wales Lines Co., 234 State St. $923,769. Bids 3/7. CD 3/14, under LB.

Conn., Waterbury—BANK—Waterbury Savings Bank, 60 Main St., 3 story, brick, steel, marble, granite bank rear addn., extensive alterations, and Main St. to Turner Constr. Co., 38 Newberry St., Boston, Mass. Approx. $250,000. Bids 3/15. CD 3/1.

▲ Conn., Wethersfield—HOUSING—Louis Mitnick, Co., 1305 Main St., Hartford, 200 ranch style frame houses, Nott and Cedar Sts. Owner builds. $2,000,000. CD 3/2.

▲ Fla., Hialeah—HOMES—Blue Ribbon Constr. Co., 1945 E. 10 Ave., 240 homes. Owner builds. Approx. $1,000,000.

Fla., Jacksonville—DWELLINGS—Linda Homes, Inc., 215 Masonic Temple Bldg., Zone 2, erecting 140 family dwellings in Allendale Subdivision bounded by 44th, Twelfth and St. Clair Sts. and Melson Ave. in northwest Jacksonville. Owner builds. $485,000. A. Eugene Cellar, Grotham Bldg., Zone 1, archt.

Fla., Miami Beach—HOTEL—Allied Constr. Co., 304 Lincoln Rd., Rd. hotel. Owner builds. Approx. $250,000.

Fla., Miami Beach—HOTEL—Calvert Hotel Co., c/o Albert Anis, archt., 420 Lincoln Rd., Penthouse, Miami Beach, hotel to Robert L. Turchin, 5800 Collins Ave. $476,000. Bids 4/6. CD 4/5.

▲ Fla., Miami Beach—HOTEL—Sea Gull Hotel, c/o contractor, 6 story, 135 room hotel, to Zaret Constr. Corp., 1901 West Ave. Approx. $1,000,000.

▲ Ga., Macon—HOMES—Fickling & Walker, 240 2 St., 200 homes. Owner builds. $1,500,000.

Ind., Indianapolis—HOUSING—Hugh Bremerman, 567 W. Westfield Blvd., 17 houses, Meridian Hills, between 73 and 74 Sts., east of Spring Mill Rd. incl. constr. Graceland St. Owner builds. $500,000.

Ky., Lexington—HOTEL—Suburban Hotel Co., Lexington, hotel, to Hargett Constr. Co., 111 Walton Ave., $700,000. Meriwether & Marye & Assoc., 236 E. Short St., archts.

La., Bossier City—HOUSING—C. G. Gibson, Bossier City, 60 houses, Williamsburg Park Subdivision. Owner builds. $650,000.

Md., Baltimore—SCHOOL, etc.—St. Michaels R. C. Church, Belair Rd. and Willow Ave., graystone brick school convent to Consolidated Eng. Co., 20 E. Franklin St. $669,000. Awarded 4/4. Murphy & Locraft, 1518 P St. N. W. Wash. D. C., archts. Saxe, Willard & Robertson, 110 W. Hamilton St., structural engrs., Eber & Axen, 916 N. Charles St., mech. engrs. CD 9/18/47.

Mass., Brookline—HOME—Beth Israel Hospital, 330 Brookline Ave., 4 story, bsmt., 40x105 ft., brick, steel, concrete nurses home, Brookline Ave. to Center Constr. Co., 140 Westbourne Terrace. $250,000. Bids 4/15. CD 2/23.

Mass., Deerfield—DORMITORIES, etc.—Deerfield Academy, Frank L. Boyden, master, Deerfield, 3 story, bsmt. dormitories, brick, steel, students activities bldg., Deerfield Campus, separate contracts. $975,000. CD 1/26 and 1/27.

Mass., Fall River—HOME—Roman Catholic Diocese of Fall River, Rev. J. E. Cassidy, 344 Highland Ave., 3 story, bsmt., brick, steel, Home For Aged, Highland Ave. to David E. McNally, 500 Westlawn St., $275,000. CD 4/28.

▲ Mass., Jamaica Plain—SEMINARY—New Minor Seminary, Rev. Richard J. Cushing, Archbishop of Boston, Lake St., Brighton, Minor Seminary, Huntington Ave., to J. J. Powers Co., 238 Main St., Cambridge, Approx. $1,500,000. Bids 2/16, awarded 2/21, Whalen & Westman, 2 Water St., Boston, archts.

▲ Mass., Peabody—HOUSING—Massachusetts Builders, Inc., 6 Pleasant St., Malden, approx. 200 frame houses, State Rte. 128. Owner builds. $1,800,000.

Mass., Southboro—SCHOOL—St. Marks School, Southboro, 2 story, bsmt., brick, steel preparatory school, on campus, Bridge, Center Sts., 32 St. James Ave. Approx. $250,000. CD 3/29.

Mass., Taunton—CHURCH—St. Anthony's R. C. Parish, M. J. Texeira, pastor, School St., 2 story, bsmt., 55x160 ft. brick, steel, limestone church, School St. to L. M. Whitehill & Sons, 29 Court St., $250,000. CD 2/23.

Mo., Lemay (St. Louis 23, P. O.)—DWELLINGS—Gene Vescovo, 324 Linda Ave., Twenty-one 1 story, 22x37 ft. brick, concrete dwellings, Telegraph Rd. and Linda Ave., Kaske and Tweed Drives, own forces.

Mo., Maplewood (St. Louis 17, P. O.)—STORE—Food Center of St. Louis, 1106 Central Industrial Dr., St. Louis, Zone 10, food store remodeling, addn., 220 car capacity car space, 2319 Big Bend Blvd., to J. W. White, 7 Maplewood Industrial Court, St. Louis, Zone 17. Approx. $250,000. Peter F. Siebel, 4525 Clarence Ave., St. Louis, Zone 16, archt.

Mo., St. Louis—APARTMENT—Roy G. Chacey, 6107 Westminster Pl., St. Louis, 4 story, 67'x89' 11" reinforced con. brick, steel, 44 family apartment, 5522 Delmar Blvd., separate contracts. $300,000.

▲ N. J., Hamilton Twp.—Trenton P. O.—RESIDENTIAL DEVELOPMENT—Carol Construction Co., 1247 Berbank St., Fair Lawn, residential development, separate contracts. $1,800,000. Erwin Gerber, 1780 Raymond Blvd., Newark, archt. Trenton Eng. Co., Broad St. Bank Bldg., Trenton, engr.

▲ N. M., Albuquerque—HOUSING—Dpt. Air Force, Pentagon Bldg., Wash. D. C., 380 2 bedroom housing units and 240 three bedroom 2½ bath units, 190

three-bedroom single-bath units to Beck-Utah-Hopkins, Irwin-Keasler Bldg., Dallas, Tex., $3,400,000 and $4,000,000 respectively. CD 4/5

▲ N. Y., Colonie (Br. Albany)—HOUSING—Colonie Corp. of America, R. W. Bailey, pres., North Broadway, Farmingdale, 400 houses on 92 acre site on Troy-Schenectady Rd. Owner builds, $2,500,000.

N. Y., Mt. Vernon—APARTMENT—Bailey Gardens, Inc., Rudolph Lidsky, pres., 350 Fifth Ave., New York, Zone 1, 6 story, 203 unit apartment at Esplanade North, Ellwood and Sheridan Aves. to Esplanade Constr. Corp., c/o owner. Approx. $990,000. Max M. Simon, 1841 Broadway, New York, Zone 23, archt.

▲ N. Y., Flushing—APARTMENT—Milton J. Kory, c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn, Zone 2, 6 story apartment, 38 St. east of Parsons Blvd. Owner builds. $1,260,000. CD 2/24.

N. Y., New York—APARTMENT—Amalgamated Housing Corp., 80 Van Cortlandt Park South, Zone 63, 8 story apartment, Sedgwick Ave., northeast corner of Norman Ave., separate contracts. $975,000. George W. Springsteen, 92 Liberty St., Zone 6, archt. CD 4/27/47.

▲ N. Y., New York—OFFICE—Dun & Bradstreet, 290 Broadway, Zone 7, 11 story office bldg., Church St. between Barclay St. and Park Pl. to George A. Fuller Co., 547 Madison Ave., Zone 22. Approx. $5,500,000. Reinhard, Hofmeister & Walquist, 145 E. 32 St., Zone 16, archts. Edwards & Hjorth, 1267 Sixth Ave., Zone 19, engrs.

▲ N. Y., New York—GENERAL ASSEMBLY—United Nations Headquarters Planning Office, 405 E. 42 St., Zone 17, 10,000 tons steel for General Assembly Bldg. at U.N. site, to American Bridge Co., 71 Broadway, Zone 4, $1,700,000. CD 11/16.

▲ O., Cleveland—HOMES, etc.—Bruscino-Fischer, Inc., 15411 Chatfield Ave., one hundred fifty 1½ story frame homes, on 8 new streets to be cut west of W. 143 St. south of Lorain Ave., separate contracts. $1,500,000.

▲ O., Cleveland Heights—APARTMENTS—Stager Corp., c/o H. P. Ells, pres., 2012 Denton Rd., four 2½ story, bsmt. brick, brick apartments, Euclid Blvd. and Overlook Rd., to L. M. Gunderson, 13124 Shaker Square, Shaker Heights. Approx. $1,000,000. CD 1/13.

▲ O., Euclid—HOMES—Sidney Zehman, 13484 Cedar Rd., Cleveland, one hundred 1½ story, bsmt., frame homes, Euclid Dr. and Eastway Ave., separate contracts. $1,000,000.

O., Lakewood—APARTMENTS—Whitecliffe Apartments, Inc., 602 Finance Bldg., Cleveland, 4 apartments, 11817 Edgewater Dr., separate contracts. $700,000.

O., Rocky River—HOMES—Philip Eggliston, 28036 W. Oakland St., Bay Village, forty homes, on 15 acre tract east of Westwood Country Club, Detroit Rd., separate contracts. $800,000.

▲ O., Shaker Heights—APARTMENTS—Ecco Constr. Co., 1540 E. 260 St., Euclid, three 3 story, bsmt., brick, steel apartments, S. Moreland Blvd., separate contracts. Approx. $1,000,000. Weinberg & Teare, 1206 Citizens Bldg., Cleveland, archts.

O., Toledo—MEDICAL—Professional Properties Co., Edgar A. Sanders, Jr., mgr., Spitzer Bldg., 3 story, 20-suite 44x49 ft., brick, stone medical bldg., air-conditioned, 422 W. Woodruff Ave., to John Nauman & Sons Co., 364 Parker Ave. Approx. $275,000. Hahn & Hayes, 723 Adams St., archts.

▲ Pa., Bristol—RESIDENCES—William W. Warner, Green Lane and Farragut Ave., residential development, Green Ln. to Frank Spezzano Jr., 209 Bond Ave. $1,750,000.

▲ Pa., Elkins Park—APARTMENT—Herman J. Friedman, 1659 E. Tulpehocken St., Phila., apartment, York and Forrest Rds., separate contracts. $2,940,000. James G. Ludwig, 6403 Market St., Upper Darby, archt.

Pa., Phila.—BANK—Pennsylvania Co. for Banking & Trusts, 15 and Chestnut Sts., 3 story, red brick, colonial Georgian style bank, Sixth and Chestnut Sts. to Turner Constr. Co., 1500 Walnut St., Phila., Zone 2. Approx. $500,000. CD 12/9

Pa., Plymouth Meeting—RESIDENCES—Heywood Hall Constr. Co., 6408 N. Camac St., Phila., residential development, Germantown Pike, Owner builds. $984,000.

▲ S. C., Spartanburg—RESIDENCES—Crystal Spring Homes, c/o contractor, residential development to P. S. Cecil, Spartanburg. Approx. $1,100,000.

Tenn., Memphis—APARTMENT—Forrest Gardens, c/o contractor, 100 apartment units, Forrest and Graham Sts., Clark & Fay, 4920 Poplar Park. Approx. $750,000.

Tenn., Memphis—HOMES—J. F. Inman, Inc., 170 Neil St., 126 homes, Marion St. east of Semmes. Owner builds. Approx. $750,000.

▲ Tenn., Memphis—HOMES—W. D. Jemison & Sons, 1352 Madison Ave., 133 homes, Halesdale subdivision. Owner builds. $1,200,000.

Tenn., Memphis—HOMES—Spencer & Riley Constr. Co., 294 N. Highland St., 153 homes, Cherry Rd. subdivision. Owner builds. Approx. $750,000.

Tex., Amon—DWELLINGS—Key City Builders, Inc., Amon, 100 dwellings. Owner builds. Approx. $700,000. CD 1/10.

Tex., Bastrop—DWELLINGS—Britton-Graves Lumber Co., Bastrop, 146 dwellings. Purchase and hire. $925,000. CD 1/31.

Tex., Beaumont—HOUSING—Hamby Constr. Co., 2940 Leverett St., 170 low-cost new housing units, Negroes. Owner builds. Approx. $875,000. CD 3/16.

Tex., Bellaire—DWELLINGS—Associated Home Builders, Bellaire, 76 dwellings. Owner builds. Approx. $900,000. CD 3/3.

Tex., Brownsville—DWELLINGS—F. G. Davis, C. R. Berry & R. S. Shelburne, Alamo, 153 dwellings, own forces. Approx. $975,000. CD 3/20.

▲ Tex., Dallas—APARTMENT—Dorchester Apartments, Inc., c/o John H. Graham, archt., 1010 20 Ave. N. W., Wash., D. C., and George N. Marble & R. M. Strode, archts., 3908 Capitol Bldg., Dallas, apartment, St. Joseph St. and Gaston Ave. to Charles H. Tompkins Co., 907 16 St. N. W., Wash. 6, D. C., $1,400,000.

Tex., Dallas—MERCANTILE, etc.—Nieman-Marcus Co., Main and Ervay Sts., 2 story, bsmt., masonry, mercantile and underground parking station to A. J. Rife Constr. Co., 2608 Inwood Rd., $775,000. CD 3/14, under LB.

▲ Tex., Fort Worth—APARTMENT—Westchester Apartments, Med. Arts Bldg., c/o Judge E. P. Hall, apartment, Summit and Pennsylvania Aves., to Charles H. Tompkins Co., 907 16 St. N. W., Wash. 6, D. C. Est., $3,000,000. John H. Graham, 1010 20 St. N. W., Wash., D. C., archt. CD 3/14.

▲ Tex., Houston—SHOPPING CENTER—Atlantic Building Corp., 1200 Travis St., shopping center. Owner builds. Approx. $1,850,000. CD 3/9.

Tex., Houston—DWELLINGS—The Biggar Co., 6020 Harrisburg St., 38 dwellings. Owner builds. $300,000. CD 3/31.

▲ Tex., Houston—APARTMENT—W. Edward Brown & Assoc., S. Richey St., 252 (Negro) rental apartment units, Sakowitz St. off Lyons Ave., own forces. Approx. $1,000,000. CD 3/3.

Tex., Houston—DWELLINGS—Home Owned Properties, Inc., Scanlan Bldg., 100 dwellings, own forces. $625,000. CD 3/31.

Tex., Houston—DWELLINGS—King & Sheets Co., City Natl. Bank Bldg., 17 addnl. dwellings. Owner builds. Approx. $250,000.

▲ Tex., Houston—DUPLEXES—Pleasantville, Inc., c/o Melvin A. Silverman, 6210 Almeda Rd., 210 duplexes off 8200 block, Market St., own forces. $1,250,000. CD 1/6.

Tex., Houston—DWELLINGS—Ruberfield Realty Co., 5223 Humble Rd., 76 dwellings, own forces. Approx. $390,000. CD 3/2.

▲ Tex., Odessa—HOTEL—Civic Hotel Corp., Odessa, 7 story, bsmt., 150-room rein.-con. frame, brick, hotel, to Von Frellich Constr. Co., Odessa, $1,115,000. CD 3/17.

Tex., San Antonio—SHOPPING CENTER—Richardson Development Corp., Hunter Bldg., shopping center, Blanco Rd. between Thorain and Lovera Blvd. Owner builds. Approx. $250,000. CD 12/7.

Tex., San Antonio—HOTEL—St. Anthony Hotel, Navarro and Travis Sts., remodeling, repairing lower floors of 1,200 room hotel, own forces. Approx. $300,000. CD 6/30.

Tex., San Antonio—DWELLINGS—Terry Thrift, Jr., 708 W. Summit Ave., 32 dwellings. Owner builds. Approx. $250,000. CD 3/23.

Alta., Edmonton—DWELLINGS—Alldrift Const. Co. Ltd., 10340 112 St., 100 dwellings. Owner builds. $750,000.

Que., Montreal—APARTMENT—L. M. Maron, 3456 Ridgewood Ave., apartment, Cote des Neiges Rd. Owner builds. $750,000.

Que., Quebec City—STORE—S. S. Kresge Co., Ltd., 7 Carlton St., Toronto, Ont., 127x130 ft., steel, masonry, steel store, St. John and St. Augustine Sts., to C. Jobin Ltd., Centre Industriel No. 5, Quebec City. Total est. Approx. $250,000. CD 10/25/44.

INDUSTRIAL BUILDINGS

BIDS ASKED

▲ Mo., St. Louis—WAREHOUSE, etc.—B.A. 4/26—Union Electric Co. of Missouri, 315 North 12 Blvd., Zone 1, 2 story, bsmt., brick, rein.-con. service, warehouse and office bldg., possible 2 story addn. to Fifth, 19—and Gratiot Sts. Approx. $0. Rathmann, Koelle & Carroll, 318 N. 8 St., St. L., archts. Wm. C. E. Becker, Ambassador Bldg., 411 No. 7 St., Zone 1, structural engr. John D. Falvey, 316 N. 8 St., Zone 1, mechanical engr. CD 2/10/47.

N. Y., Brooklyn—STORAGE—B.A. 4/28—Joseph Schlitz Brewing Co., 149 Melrose St., storage addns. $75,000. Alex. Eis, Harvey, 153 E. Elizabeth St., Detroit, Mich., engr. CD 12/21.

Tenn., Rockwood—BOTTLING PLANT—B.A. 4/29—Rockwood Coca-Cola Co., c/o Bianchini, Palm & Purnell, archts., 501 Cherry St., Chattanooga, bottling plant. Approx. $60,000.

La., Franklinton—SALES and SERVICE—B.A. About 5/1—H. Burkham, c/o Clayton D'Ary, Jr. & Assoc., archts., 2045 N. 39 St., Baton Rouge, auto sales and service bldg.

Conn., Milford—AUTO SHOWROOM-SERVICE—Bids Asked—Page Motor Co., 85 New Haven Ave. (selected list bidders), 1 story, 100x100 ft., brick, concrete auto showroom-service. Post Rd. $75,000. Leo F. Caproni Assocs., 1221 Chapel St., New Haven, archts.

Conn., Waterbury—FACTORY—Bids Asked—A. H. Wells & Co., Inc., 193 Grand St., 2 story, 60x104 ft. and 2 story, 40x60 ft. brick steel factory addns., East Aurora St. $75,000. Elbert J. Richmond, 174 Grand St., archt.

O., Cincinnati—BAKING PLANT—Bids Asked—Continental Baking Co., 168 Douglas Ave., New York, N. Y., baking plant addn., Richmond St. $150,000. Bellman, Gullett & Richards, 518 Jefferson St., Toledo, archts. CD 3/31.

SOON LETS CONTRACT

Ala., Montgomery—SALES and SERVICE—Ray-Brooks Mchy. Co., c/o Pearson, Tittle & Narrows, archts., First National Bank Bldg., soon lets contract construction equipment sales and service bldg. $125,000. CD 3/30.

Calif., Goleta—PLANT—Goleta Lemon Assoc., Goleta, soon lets contract 360x442 ft., citrus packing plant. $500,000. W. W. Ache, 301 N. Citus Ave., Los Angeles, archt.

Calif., Sacramento—WAREHOUSE, etc.—McKesson & Robbins, Inc., 42 First St., San Francisco, soon lets contract 1 story, 240x420 ft., rein.-con. steel warehouse and office. Approx. $68,000. Herbert E. Goodpastor, Mitau Bldg., archt.

Calif., San Bernardino—STORAGE—Bekins Van & Storage Co., 1335 S. Figueroa St., Los Angeles, soon lets contract 3 story, 90x220 ft., rein.-con. storage warehouse. $150,000. C. Duel & G. F. Smith, 3806 Beverly Blvd., Los Angeles, engrs. CD 3/20.

Fla., Miami—PLANT—Florida Dairies Co., c/o W. T. Lefting, engr., 4170 N. W. 32 Ave., soon lets contract 2 story, 127x120 ft. milk plant. CD 12/21/48.

La., New Orleans—PLANT—Times-Picayune Publishing Co., c/o Moise H. Goldstein, Parham & Labouisse, archts., American Bank Bldg., soon lets contract printing plant addns., alterations.

La., North Baton Rouge—PLANT EXPANSION—Ethyl Corp., c/o Albert Kahn Assoc. Architects & Engineers, Inc., archt., 45 New Center Bldg., Detroit, Mich., soon lets contract central bldg. and storage facilities. CD 7/2/47.

Minn., Fosston—PLANT—Fosston Co-operative Creamery Assn. soon lets contract 1 story, 59x75 ft. frozen food locker plant. Approx. $125,000. M. & G. Buetow, 1931 University Ave., St. Paul, archts. CD 7/14.

O., Cleveland—SALES and SERVICE—Edgewater Chevrolet, Inc., 5417 Detroit Ave., soon lets contract 1 story, steel, brick, block sales and service bldg. $75,000. Weingert & Teare, 1227 Schofield Bldg., archts.

▲ O., Cleveland—FOUNDRY—Ford Motor Co., 3000 Schafer Rd., Dearborn, Mich., soon lets contract substructure of foundry. Total $10,000,000. CD 2/2.

▲ Pa., Lancaster—RESEARCH LABORATORY, etc.—Armstrong Cork Co., Liberty and Charlotte Sts., soon lets contract research laboratory and pilot plant $1,500,000. Shreve, Lamb & Harmon, 11 E. 44 St., New York, N. Y., archts. Edwards & Hjorth, 1267 6 Ave., New York, N. Y., engrs. CD 3/22.

S. C., Columbia—PLANT—Wm. G. Lyles, Bissett, Carlisle & Wolff, archts., 1321 Bull St., soon lets contract plant for Crowson-Stone Printing Co., 805 Main St.

S. C., Newberry—PLANT—Mollohan Mill, c/o J. N. Pease & Co., archts., 1141½ E. 5 St., Charlotte, N. C., soon lets contract plant addn.

Ont., Toronto—PLANT—E. Morgan, archt., 906 Yonge St., Toronto, soon lets contract 1 story concrete steel brick plant addn. for Canadian Triangle Wire & Cable Co., Ltd., 4000 W. Dundas St., Toronto. $75,000. CD 6/18/45.

Ont., Toronto—WAREHOUSE—Lloyd & Sons Ltd., 7 John St., Wrigham, soon lets contract warehouse. Lawrence Ave. $70,000.

Ont., Toronto—FACTORY—M. Sklar, archt., 165 Spadina Ave., soon lets contract 2 story, bsmt., 57x160 ft. concrete steel brick factory for M. Silverberg, 243 W. Queen St. Approx. $100,000.

Ont., Toronto—FACTORY, etc.—N. A. Armstrong, archt., 19 Melinda St., soon lets contract 1 story, steel, brick, limestone, factory and office, Queen Elizabeth Way at Zorra Rd., Etobicoke, for G. H. Woods & Co., 587 Fleet St. W. Approx. $300,000.

LOW BIDDERS

N. C., Raleigh—SALES and SERVICE—Harmon Motor Co., c/o Holloway, Weber & Reeves, archts., 191½ Hillsboro St., auto sales and service bldg., from A. H. Guion & Co., Wilkinson Blvd., Charlotte. $127,284. Est. $80,000. CD 3/21.

Tex., Dallas—FREIGHT DOCK and STORAGE—D. C. Hall Transport, Inc., 921 Wall St., Apr. 3, freight dock and storage, from O'Rourke Constr. Co., 1001 W. Commerce St., $113,550. John A. Perkins, 2203½ Cedar Springs St., archt.

CONTRACTS AWARDED

▲ Calif., Los Angeles—INDUSTRIAL—McCulloch Motors Corp., 6101 Century Blvd., 140,000 sq. ft., steel, concrete, brick industrial bldg., to Lloyd R. Reeve, 1344 Wilshire Blvd. Approx. $1,000,000. Walter D. Hessert, 1344 Wilshire Blvd., engr.

Conn., West Hartford—PLANT—Carlin Electric Co., Inc., 626-628 Capitol Ave., Hartford, 1 story, 120x310 ft., brick, steel, concrete plant, Oakwood and New Park Aves. to Brookhaven Constr. Co., 254 Prospect Ave., Hartford. $150,000.

Conn., West Haven—TERMINAL—Connecticut Motor Lines, Inc., 126 Ferry St., New Haven, 1 story, 90x250 ft. brick, concrete terminal, Front Ave. to Jack Halprin, Inc., 675 State St., New Haven. Approx. $70,000. Jacob Weinstein, 100 Lowin Ave., New Haven, archt.

D. C., Wash.—WAREHOUSE, etc.—Stanford Paper Co., 532 Woodward Bldg., one 2 story masonry warehouse and office, 3001 V St., N. E., to Wm. P. Lipscomb Co., Woodward Bldg. $226,000. Awarded 4/3. Leon Chatelain, 1727 K St., N. W., archt.

▲ Fla., Oldsmar—POWER PLANT—Florida Power Co., c/o contractor, power plant, to Kuljian Corp., 1518 Walnut St., Phila., Pa., Approx. $1,000,000.

Fla., Tampa—PLANT—American Can Co., c/o contractor, plant addn., to Paul Smith Constr. Co., 310 N. Rome Ave. Approx. $95,000. CD 9/7/45.

Ga., Columbus—MILL—Muscogee Mfg. Co., Columbus, Miss., to A. K. Adams Co., Inc., 542 Plum St., N. W., Atlanta. Approx. $68,000. Bids 4/5. CD 1/25.

Ill., Chicago—FACTORY—Olson Rug Co., 2800 N. Pulaski Rd., 6 story brick factory addn., to Gust K. Newberg Constr. Co., 2340 N. Ashland St., Approx. $900,000. Bids 1/17. CD 1/17.

Ill., East St. Louis—TERMINAL, etc.—The Pennsylvania R. R. Co., c/o engr., Broad St. Station, Phila., 4, Pa., and Illinois Terminal R. R. Co., 1209 Washington Ave., St. Louis 3, Mo., 1 story, 450 and 60 ft. brick, concrete re-gat terminal and warehouse, fronting 50 north of West Broadway, to Frank Connon Contg. Co., 2100 Olive St., St. Louis 3, Mo. Approx. $275,000.

Ia., Alta—GRAIN ELEVATOR—Alta Co-operative Elevator Co., Alta, grain elevator, to Tillotson Constr. Co., 2215 Jones St., Omaha, Neb. $140,000.

La., New Orleans—WAREHOUSE—New Orleans Passenger Terminal, 501 S. Saratoga St., warehouse for express facilities, to Keller Constr. Corp., 2900 Palm St. $359,000. Bids 4/5. CD 3/21.

Mo., St. Louis—WAREHOUSE, etc.—M. & V. Investment Co., 4345 Clayton Ave., Zone 10, 1 and 2 story, 121 x 147 ft., brick, concrete, warehouse and office addn., to 620 Branson Ave., to C. & M. Contg. Co., 401 N. Theodosia Ave., Zone 10. $100,000. C. C. Price, 4705 Chestnut St., Zone 1, engr.

Mo., St. Louis—PLANT—Merriam Printing & Lithographing Co., Inc., 2602 Locust St., Zone 3, 1 story, 79 x 86 ft., reinforced brick, steel printing plant, 2562 Kami St., to Willingham Constr. Co., Inc., 5701 Vernon Ave., Zone 22. W. P. Manske, 9947 Riverview Blvd., Zone 21, archt.

Mo., St. Louis—WAREHOUSE—St. Louis Ave. Corp., 2525 St. Louis Ave., Zone 6, 36 x 140 ft., concrete, block, steel joist, steel roof warehouse, 2527 St. Louis Ave., separate contracts. Edw. J. Lawler, 7637 Dale Ave., Richmond Heights, St. Louis, Zone 12, archt.

Mo., St. Louis—WAREHOUSE—Valier & Spies Milling Co., Div. of Flour Mills of America, Co., c/o L. C. Chase, vice pres. and general mgr., 5020 Shreve Ave., Zone 15, design and construction 97½ x 101 ft., reinforced floor storage warehouse, from 47 to 139 ft. high, to Jones Hetherington Constr. Co., 1921 Baltimore Ave., Kansas City, Mo. Approx. $350,000.

O., Cleveland—PUMP HOUSE, etc.—Columbia Iron & Metal Co., 6600 Grant Ave., 26 and 44 ft. pump house and 26 x 30 ft. boiler plant, concrete block, to H. W. Marcuson Builders, Inc., 1261 Old Arcade. $58,000. Est. $50,000. Christian Schwarzenberg & Suede, 1836 Euclid Ave., engrs.

Ore., Portland—PLANT—Damascus Milk Co., S. E. Morrison and 33 Sts., raising roof structure over 100 x 176 ft. area of plant and extending walls 17 ft., to Robertson Has & Wallace, 1801 S. E. Grand St. $200,000. Awarded 3/24. Roscoe D. Hennaway, Outlook Bldg., archt.

Ore., Portland—PLANT—Journal Publishing Co., 803 S. W. Front St., remodeling to bunker, and on mezzanine of old Journal newspaper plant, to Donald M. Drake, Lewis Bldg. $100,000. Awarded 4/4. Glen Stanton, Concord Bldg., archt.

▲ Pa., Aliquippa—COKE OVENS—Jones & Laughlin Steel Corp., 3 and Ross Sts., Pittsburgh, battery of boiler plant extens., etc., 99 coke ovens to Koppers Co., Inc., Koppers Bldg., Pittsburgh. Approx. $4,000,000. CD 11/19/47.

R. I., Providence—WAREHOUSE—What Cheer Bottling Co., 409 Charles St., 4 story, 75 x 135 ft., brick, concrete warehouse, office space included, Silver Spring St., to Thomas Ricci, 90 Job St. Approx. $68,000. CD 12/21.

▲ S. C., Newberry—WAREHOUSE, etc.—Kendall Mills, Paw Creek, warehouse and main mill extension, to Daniel Constr. Co., Greenville. Approx. $1,000,000. Bids 3/24. CD 3/31.

▲ Tenn., Memphis—PLANT—Firestone Tire & Rubber Co., c/o contractor, 250,000 sq. ft. mfg. plant addn., to Building Constructors, Inc., 524 Dermon Bldg., Approx. $1,000,000.

▲ Tenn., Memphis—PLANT—Plough, Inc., c/o contractor, drug products mfg. plant addns., alterations, to S. & W. Constr. Co., Shrine Bldg. Approx. $1,500,000. CD 4/5, under LB.

Tex., Dallas—SUB-STATION—Dallas Power & Light Co., Dallas Power & Light Co. Bldg., electric sub-station in eastern sect. of city, own forces. Approx. $750,000. CD 4/4.

Tex., Dallas—SUB-STATION—Dallas Power & Light Co., Dallas Power & Light Bldg., addn., electric power sub-station in outlying districts. Approx. $300,000; electric power lines radiating from new sub-stations and running to new zones, $275,000, own forces. CD 2/3/49.

Tex., Fort Worth—REFINERY—Premier Petroleum Co., Mt. Olivet Rd., addn., modernization, enlargement refinery. Purchase and Hire. Approx. $400,000. CD 4/4.

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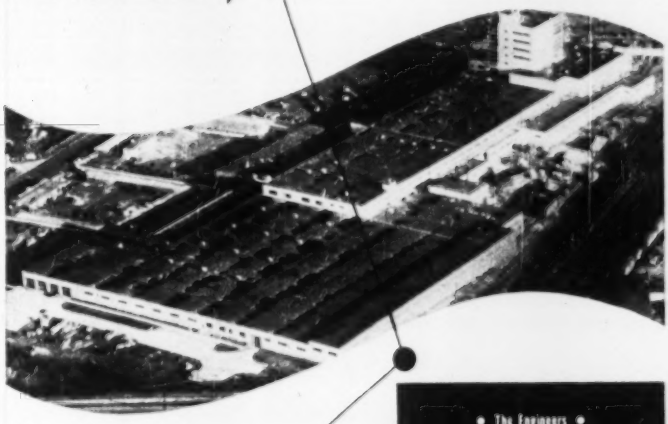

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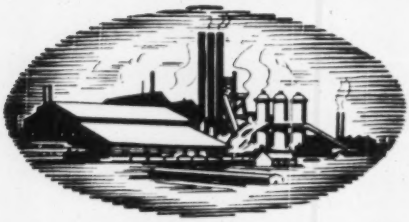

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▲ Tex., Sunray—CATALYTIC CRACKING UNIT—Shamrock Oil & Gas Corp., Sunray, noncatalytic catalytic cracking unit, near here, to Catalytic Constr. Co., 1528 Walnut St., Phila., Pa., $1,750,000.

Tex., Yoakum—CREAMERY PLANT—Guadalupe Valley Creamery Co., Yoakum, creamery plant, to F. O. Crawford, Yoakum, $71,225.

Wash., Yakima — PLANT — Republic Publishing Co., Yakima, 2-story, bsmnt. reinforced newspaper publishing plant, to Howard S. Wright & Co., 407 Yale Ave. N., Seattle, Approx. $900,000. W. J. Maloney Central Bldg., Seattle, Zone 4, archt.

Wis., Princeton—FACTORY—Handicraft Co., Princeton, 1 story, bsmnt., 70 x 133 ft., 23 x 70 ft., steel, concrete block factory, concrete rdfs. and floors, to Liese Lbr. Co., Princeton. R. M. Connelly, 126 W. Washington St., Appleton, engr.

Ont., Chatham—PLANT—Ontario Steel Products Ltd., 105 St. George St., plant addn., to Austin Co., Ltd., 2 King St. E., Toronto, Approx. $175,000.

▲ Ont., Sarnia—PLANT—Dow Chemical of Canada Ltd., plant mfg. solvents for dry cleaning industry, to Austin Co., Ltd., 2 King St., E., Toronto, Approx. $1,000,000. CD 4/17/47.

Que., Montreal—WAREHOUSE—Beatty Brothers Ltd., Fergus, Ont., 1½ story, 110 x 210 ft. concrete, structural steel, brick warehouse, to L. O. Taylor, Ltd., 912 Mac Bichan St., Outremont. $200,000. S. Conber & Son, 4444 W. Sherbrooke St., Montreal archts.

Que., Montreal—WAREHOUSE—St. Pierre Realties Ltd., 440 St. Helene St., 1 story, 100 x 192 ft., concrete brick warehouse, to L. Donolo, Inc., 8320 St. Lawrence St., $100,000. Bids 10/24. CD 10/11.

UNCLASSIFIED

BIDS ASKED

Nebraska—RURAL DISTRIBUTION LINES—B.A. 4/25—McCook Public Power Dist., McCook, 328.2 mi. rural distribution lines in Red Willow, Frontier, Hitchcock, Lincoln and Hayes Counties. Plans deposit $10. Philip L. Burns, 630 Davenport Bank Bldg., Davenport, Ia., consult. engr. CD 5/16.

† Md., Carderock—PARKING SHED—B.A. 4/26—Pub. Wks. Office, Potomac River Naval Command, Naval Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash. 25, D. C., parking shed at David Taylor Model Basin, Spec. 29919. CD 7/26/46. W. Taylor, Model Basin, engr.

▲ Mass., Boston—PIERS—B.A. 4/26—Port of Boston Authority, Commonwealth Pier 5, South Boston Marine Terminal and Facilities Piers No. 10, 50, Charlestown, Charlestown, $6,000,000. Plans deposit $100. Thomas Worcester, Inc., 84 State St., Boston, consult. engr. CD 1/14/49.

N. S., Bedford Basin (Postal Dist., Halifax)—MINING MAGAZINES—B.A. 4/26—J. D. McArthur, 70 Gloucester St., Ottawa, Ont., superintendent, controlled mining magazines, Government of Canada, Ottawa, Ont., magazines. Plans deposit $25. Dept. National Defense, Elgin St., Ottawa, Ont., archt. Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., engrs.

N. S., Halifax—FISHERIES EXPERIMENTAL STATION—B.A. 4/26—Acting Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., fisheries experimental station alterations, repairs. Approx. $175,000. Plans deposit $50. G. Brault, Ottawa, Ont., engr.

Que., Montreal—TRAFFIC CONTROL SYSTEM—B.A. 4/26—Executive Committee, Municipality, traffic control system of 20 intersections, Henri Gibeau, City Hall, City engr.

† N. C., Fort Bragg—STADIUM—B.A. On or About 4/27—Engr., 30th Customhouse, Wilmington, reinforced concrete stadium for athletic field, Inv. No. 31-075-50-4.

† Arizona-California-Nevada—BATTERY DISTRIBUTION BOARDS, etc.—B.A. 4/27—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., battery distribution boards for Units A-2, A-9 and unit auxiliary power boards for Units A-3, A-4 and A-9, Hoover Power Plant. Boulder Canyon Proj., Spec. 2961-A. E. McClellan, ch. engr.

† Missouri—FENCE—B.A. 4/27—U. S. Eng., U. S. Courthouse & Custom House, St. Louis, Zone 1, intruder fence, explanation guard fence at Mississippi River Lock and Dam 25, Lincoln Co., GIVENS 23-065-50-83.

South Carolina—RURAL DISTRIBUTION LINES—B. A. 4/27—South Carolina Public Service Auth., Moncks Corner, Santee Cooper Transmission Line No. 7. Plans deposit $10.

† Virginia—POWERHOUSE, etc.—B.A. 4/27—U. S. Engr., foot of Prosper St., Norfolk, powerhouse and substructure, Bluggs Island Proj., Mecklenburg Co. Inv. switchyard, No. GIVENS 44-110.50-58. CD 8/3/48.

▲ Mass., Boston—SUBWAY—B.A. 4/28—Commonwealth of Mass., Metropolitan Transit Auth., 31 St. James Ave., Arlington, Station alterations, Arlington and Boylston Sts., Approx. $1,000,000. CD 1/19/50.

N. Y., Astoria—PLATFORM EXTENS.—B.A. 4/28—Bd. Transportation, 250 Hudson St., New York, Zone 13, platform extens. to Queensboro Plaza, 39 Ave., 13 Broadway, 30 Ave., Astoria Blvd. and Ditmars Blvd. Stations of the Astoria Line, Queens Boro.

† Okinawa, Ryukyus Islands—WHARF—B.A. 4/28—Dir. of Engr., About 5/3—U. S. Eng., APO 331, San Francisco, Calif., construct approx. 1,600 lin. ft. steel sheet pile bulkhead for mooring of ship vessels and approx. 1,600 lin. ft. steel sheet pile bulkhead for deep draft vessels.

† Tenn., Oak Ridge—BULK SHIELDING FACILITIES, etc.—B.A. 5/1—U. S. Atomic Energy Comm., P.O. Box E, Attention R. J. Dunbar, Engineering Div., Oak Ridge, new bulk shielding facility and associated pump pit at the Oak Ridge National Laboratory, X-10 area. Inv. No. 401-50-12A. Plans deposit $25.

Man., Churchill—HARBOR IMPRVS.—B.A. 5/1—National Harbors Bd., Dept. of Marine, Impros. for Government of Canada, Ottawa, Ont. Plans deposit $100. CD 5/4/48.

† North Dakota—TRANSMISSION LINE—B.A. 5/2—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver, Colo., construct Leeds-Rolla 69-kilovolt transmission line, Transmission Div., Missouri River Basin Proj., Spec. No. 2963.

† Montana—GOVERNORS—B.A. 5/4—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point, or f.o.b. cars Louisville, 2 governors with pumping equip. for regulating speed of 23,500 hp., 150 rpm., vertical shaft, single-runner, Francis-type, hydraulic turbines, Canyon Ferry Power Plant, Helena-Great Falls Div., Canyon Ferry unit, Missouri River Basin Proj., Spec. 2946.

Pa., Zieglerville—SWIMMING POOL—Bids Asked—Young Mens Hebrew Assn., Broad and Pine Sts., Phila., swimming pool, $50,000. Klauenstein & Kramer, Broad St. Station Bldg., Phila. engrs.

▲ Texas—GAS LINES—Bids Asked—Transcontinental Gas Pipe Line Corp., Gulf and Bay Bldg., Houston, Schedule B, 45 mi. 24 and 26 in. gas lines between south of Kenedy and Refugio, Approx. $1,775,000. Schedule C, 114.9 mi. 26 and 30 in. natural gas line, between Edna to Porters. $5,130,000. CD 1/12.

Tex., Clairmont—PIPE LINE—Bids Asked—Texas-New Mexico Pipe Line Co., 720 San Jacinto St., Houston, route oil pipe line gathering system in Kent Co., Clairmont Area.

SOON LETS CONTRACT

La., New Iberia—EXHIBIT BLDG.—Louisiana Sugar Cane Festival & Fair Assn., c/o Owen J. Southerland, archt., 126 W. Main St., soon lets contract exhibit bldg., $150,000. CD 3/23.

Md., Fairfield (Baltimore)—PIER—Maryland Dredging & Const. Co., Inc., Fairfield, soon lets contract constr. repair pier, 45 x 200 ft., Pier 3, with steel piling and decking, $100,000. F. Lester Simon, 1104 Mercantile Trust Bldg., Baltimore, engr.

Missouri—RURAL DISTRIBUTION LINES—Central Missouri Electric Co-operative, Marshall, soon lets contract 325 mi. rural distr. lines, Lynn, Pettis and Saline Counties, $350,000. Frank Horton & Co., Denver, engrs. CD 1/26.

South Dakota—RURAL DISTRIBUTION LINES—Bon Homme-Yankton Electric Ass'n., Tabor, soon lets contract 540 mi. rural distr. lines, Bon Homme and Yankton Counties, $635,000. Buell & Waller, Insurance Exchange Bldg., Sioux City, Ia. engrs. CD 1/31.

LOW BIDDERS

Georgia—RURAL DISTRIBUTION LINES—Okefenoke Rural Electric Membership Corp., Nahunta, Apr. 4, 144.5 mi. rural distr. lines and 28.5 mi. transmission, in Baker, Wayne, Nassau, Camden, Dougherty, Ware and Charlton Counties. Jones, Thompson & Warren, Inc., Inv. No. 1-0, Lewis St., Montgomery, Ala., $174,216. CD 3/21.

La., Baton Rouge—City, City Hall, Apr. 4, Class A Fire Alarm system, Southeastern Electric Constr. Co., Fire Alarm system, Ala., $83,556. CD 3/15.

Minnesota—RURAL DISTRIBUTION LINES—Lyon-Lincoln Electric Co-operative, Tyler, Mar. 29, about 140 mi. rural distr. lines, Lyon, Lincoln, and Yellow Medicine Counties, from Lyons Constr. Co., Early, Ia., $127,030. CD 3/14.

Minnesota—RURAL DISTRIBUTION LINES—Rural Co-operative Power Assn., Elk River, Mar. 31, about 123 mi. rural distr. lines, Hennepin, Wright, Meeker, Kingsbury, Anoka, Pine, Chisago, Isanti, Rock and Hubbell County Co-operatives, $475,230. CD 3/28.

Missouri—RURAL DISTRIBUTION LINES—Citizens Electric Corp., Theo. A. Carron, owner, Ste. Genevieve, Mar. 30, approx. 186.07 mi. rural distr. lines, Sect. D, 117.28 mi., Sect. E and 187.42 mi. Sect. G, on a total 491.27 mi. 7.2 kv. single phase rural distr. lines, Ste. Genevieve, Perry and Cape Girardeau Counties, Missouri, SAD, 586, A. B. Chance Co., Centralia, Mo., from U. S. Brazton Co. Dyersburg, Tenn., $233,254. CD 3/14.

Oregon—RURAL DISTRIBUTION LINES—Benton-Lincoln Electric Co-operative, Corvallis, selected bids Apr. 5, 190 mi. rural distr. lines, Marion Co. L. B. Hill, $57,363. CD 4/21.

Pa., East Stroudsburg—FIRE TOWERS, General State Auth., 18 and Herr Sts., Harrisburg, Apr. 5, construct fire towers and fireproof towers, to remove fire hazards at Stroud Hall, East Stroudsburg State Teachers College, from Raymon R. Weiler, Box 109, Nanticoke, $58,900. Est. $98,400. CD 3/16.

Utah, Provo—ATHLETIC STADIUM—Church of Jesus Christ of Latter Day Saints, 47 S. Temple St., Salt Lake City, reinforced field stadium at Provo, for Brigham Young University, from Mark B. Garff & Ashton & Garff Const. Co., c/o Mark B. Garff, P.O. Box 1254, Salt Lake City, Approx. $900,000. Awarded 3/24. CD 3/21.

▲† Virginia and North Carolina—RAILROAD RELOCATION—U. S. Eng., foot of Front St., Norfolk, Va., Apr. 4, relocating railway tracks incl. trestle across the Roanoke and Dan Rivers, approx. 2,600 ft. between Jeffress to Clarksville, Buggs Island Reservoir project, Spec. No. GIVENS 44-110.50-52, from Colwell Constr. Co., Box 62, Winchester, Ky., $1,408,004. CD 3/15.

† Washington—SWITCHYARD—Bureau Reclamation, Dpt. Interior, Coulee Dam, Mar. 30, right switchyard extens. for Grand Coulee Power Plant, Columbia Basin Proj., Spec. 2933, from Morrison-Knudsen Co., Inc., and Peter Kiewit Sons' Co., Hoge Bldg., Seattle, Wash., $97,864. Est. $137,008. CD 3/2.

@† Alaska, Anchorage—TRANSIT MIXED CONCRETE, etc.—U. S. Eng., APO 942, c/o PM, Seattle, Wash., Anchorage, Apr. 4, transit-mixed concrete, aggregate and other allied materials for construction at Fort Richardson, Inv. No. 1, from M. & B. Constr. Co., Anchorage, Schedule A, $466,255; Schedule B, $425,425. CD 3/27.

CONTRACTS AWARDED

† Arkansas and Oklahoma—TRANSMISSION LINE—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., 161-kv. transmission line in north-central Arkansas to point near Pocahontas, Ark., to J. & J. Constr. Co., First Natl. Bldg., Oklahoma City, Okla., $6,33,542. CD 3/9.

Calif., Inglewood—GRANDSTAND—Hollywood Turf Club, 1050 S. Prairie Ave., grandstand, to Robert E. McKee, 4700 San Fernando Rd., Los Angeles, $750,000. CD 6/16.

Calif., North Long Beach—SITE IMPRVS.—Lakewood Park Corp., 9616 Long Beach Blvd., site improvements, incl. 12 streets, 11,545 lineal ft. concrete curbs, gutters, sidewalk paving, to J. A. Thompson & Son, Box 510, Inglewood, $920,000. South west Drilling Service, 2124 W. Florence Ave., Los Angeles, engrs.

Fla., Gainesville—STADIUM—State Bd. Control, Atlantic National Bank Bldg., Jacksonville, Stadium addn. at University of Florida to J. H. Lord Constr. Co., Lakeland, $698,700. CD 4/7, under L.P.

† Idaho, Arco—ELECTRICAL DISTRIBUTION LINE—Atomic Energy Commission, Operations Office, Idaho Falls, Idaho, 6.9-kv. electrical distr. line from Scoville substation to site of materials testing reactor, to City Electric Co. & Morrison-Knudsen Co., Inc., 319 Broadway, Boise, $51,276.

Ind., Martinsville—DRIVE-IN THEATRE—Mr. Robert W. Dyer, Spencer, 350-car drive-in theater, Main St., to Harry C. Miller, Spencer. Approx. $50,000.

Kan., Independence—DRIVE-IN THEATER—Theatre Enterprises, Inc., Town Petroleum Bldg., Dallas, Tex., and Wm. H. Wagner, Independence, drive-in theater, separate contracts. Approx. $50,000.

Kan., Larned—DRIVE-IN THEATER—Don Bennett & H. L. Reed, State Theater, 250-car drive-in theater, 4 mi. west east, North Pawnee, separate contracts, $50,000.

Miss., Gulfport—MOTOR COURT—A. H. Barley, c/o contractor, Anchorage, Gulfport, to Ralph Mancuso, Gulfport. Approx. $60,000.

Mo., Warrenton—DRIVE-IN THEATER—W. T. Zimmerman, owner, c/o Viola Theatre, Warrenton, 500-car drive-in theater, junction Rts. 40 and 47, to be known as Mid-View Drive-In Theater, separate contracts, Approx. $60,000.

N. C., Asheville—MOTOR COURT—Beaver Lake Courts, c/o W. K. Page, Asheville, motor court, Sewer, Building, $75,000.

Oklahoma—RURAL DISTRIBUTION LINES—Red River Electric Co-operative, Marietta, 121 mi. rural distr. lines, Love Co., to Woodrow & Polk, Purcell, $133,762. Est. $140,000. E. P. Taylor & Co., 4111 E. 11 St., Tulsa, engrs. Awarded 4/4. CD 3/27-48.

▲ Texas and Louisiana—GAS LINE—Transcontinental Gas Pipe Line Corp., Gulf and Bay Bldg., Houston, Schedule A, 10 mi. 24 in. gas line between Refugio, Tex., natural gas line section to H. B. Zachry, Box 2510, San Antonio, Approx. $3,778,000. Total est. $4,660,000. CD 4/3.

▲ Texas and Louisiana—GATHERING LATERALS, etc.—Transcontinental Gas Pipe Line Corp., Gulf and Gas Bldg., Houston, Tex., Texas Unit 1, gathering laterals in 58 mi. 4, 6, 8, 10 & 14 in. natural gas pipe, Eagle Lake area to T. & P. County Co., Inc., 3029 Homestead Rd., Houston, Tex., Approx. $580,000.** Texas Unit 1, gathering laterals, 98 mi. 4, 6, 8, 10 & 12 in. natural gas lines, Wharton area to Angelt County, Co. 429 S. Port St., Corpus Christi, Texas, Approx. $1,256,000.** Texas Unit 2, gathering lines in 38 mi. 4 to 8 in. natural gas lines, Simpson to Jones & Kistaire, Inc., Ajax, Tex., Approx. $228,000.** Texas Unit 2, gathering lines in 41 mi. 4 to 14 in. natural gas lines, Refugio to Victoria, Tex., Lateral Victoria to Victoria Oil Pipeline Co., Victoria, Tex., Approx. $580,000.** Tex., Schedule A, 80.1 mi. 10- to 14-in. gas natural gas lines, Dow Lateral to Victoria Oil, Massey Pipe Line Const. Co., Hwy. 9, Corpus Christi, Tex., Approx. $1,200,000.** Schedule D, 41.9 mi. 10 in. natural gas pipe line from Porters to Sabine River, Tex., to Texas Southern Const. Co., Wagoner Bldg., Fort Worth, Tex., Approx. $4,050,000.** Schedule E, 81.4 mi. 10 in. natural gas pipe line from Sabine River, Tex., to Ponce, La., to Anderson Bros. Corp., 707 N. Denton St., Houston, Tex., Approx. $3,360,000. Grand total $11,254,000. CD 1/12.

Texas—PIPE LINE—Stanolind Pipe Line Co., Gulf Bldg., Houston, 34 mi. 8 in. pipe line, Post area to Smith County, Corp. Fort Worth Natl. Bank Bldg., Fort Worth. Approx. $310,000.

Tex., San Antonio—STREET LIGHTING—City Public Service Bd., 201 N. St. Mary's St., Unit 9, underelectrical street lighting, more around. $100,000. CD 1/19.

Proposal Advertisements see pp. 114, 115 & 123

OFFICIAL PROPOSALS

Bids: May 2, 1950 (688)

Additions to Water Supply

Notice to Bidders

Sealed bids for laying approximately 34,580 lineal feet of 48-inch, 9500 lineal feet of 36-inch, and 3300 lineal feet of 24-inch Prestressed Concrete Pipe, together with all valves, fittings and appurtenances for additional water supply from Lake Ontario will be received by the City Purchasing Agent at his office, Room 36, City Hall, No. 20 South Fitzhugh Street, Rochester, N. Y., until 11 o'clock A.M., Eastern Standard time on May 2nd, 1950, at which place and time they will be publicly opened and read aloud.

Plans, Bidding Sheets, Specifications and Contract may be examined at the office of the Purchasing Agent, and copies obtained upon payment of $25.00 per set, which money will be refunded, providing the plans and specifications are returned in good condition within ten days after the date of opening of the bids.

All bids shall be made on the form provided in the Contract documents and shall be accompanied by a certified check, payable to the City of Rochester, N. Y., for an amount equal to five per cent (5%) of the total amount of the bid, as a guarantee that the bidder will execute the Contract within Ten (10) days after being notified that his bid has been accepted.

The Purchasing Agent reserves the right to reject any or all bids.

Dated: April 18th, 1950

FRED W. ERETH
Purchasing Agent

Bids: April 26, 1950 (696)

Construction of Superstructures

PENNSYLVANIA TURNPIKE
COMMISSION
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburgh, Pennsylvania, until 10:00 A.M. (Eastern Standard Time), the 26th day of April 1950, and immediately thereafter will be taken to the Public Utility Commision's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud, for the following cotract and/or contracts.

For the construction of the superstructures, Turnpike Section 316F, Brush Creek Viaduct, in North Huntingdon Township, Westmoreland County, Turnpike Section 316C, Plum Creek Viaduct in Plum Township, Allegheny County, and Turnpike Section 391D2, Willow Run Viaduct in Hampton Township, Allegheny County, part of the Western Pennsylvania Turnpike Extension, Commonwealth of Pennsylvania. These sections being situated as follows:

Beginning at a point approximately 300 feet West of the Centerline of Brush Creek at Turnpike Station 371+89, North Huntingdon Township, Westmoreland County, thence in an Easterly direction 1,005 feet to a point approximately 695 feet East of the Centerline of Brush Creek in North Huntingdon Township, at Turnpike Station 381+93, Westmoreland County, a distance of approximately 0.19 miles.

The approximate quantities of the principal items are as follows:

Class A Concrete for Bridge Deck, 1,960 cu. yds.; Steel Reinforcing Bars, 340,000 pounds; Structural Carbon Steel, 2,885,000 pounds; Fabricated Structural Silicon Steel, 150,000 pounds.

Beginning at a point approximately 80 feet West of the Centerline of the center track of the Unity Railways on the West bank of Plum Creek, in Plum Township, at Turnpike Station 1228+98, Allegheny County, thence in an Easterly direction 1,005 feet to a point approximately 280 feet East of the Centerline of the track of the Unity Railways on the East bank of Plum Creek in Plum Township, at Turnpike Station 1239+03, Allegheny County, a distance of approximately 0.19 miles.

The approximate quantities of the principal items are as follows:

Class A Concrete for Bridge Deck, 1,970 cu. yds.; Steel Reinforcing Bars, 347,000 pounds; Structural Carbon Steel, 2,232,000 pounds; Fabricated Structural Silicon Steel, 855,000 pounds.

Beginning at a point approximately 180 feet West of the Centerline of Willow Run in Hampton Township at Turnpike Station 491+63.71, Allegheny County, thence in an Easterly direction 604.34 feet to a point approximately 160 feet East of the Centerline of Township Road 584 in Hampton Township at Turnpike Station 497+68.05, in Allegheny County, a distance of approximately 0.11 miles.

The approximate quantities of the principal items are as follows:

Class A Concrete for Bridge Deck, 1,180 cu. yds.; Steel Reinforcing Bars, 209,000 pounds; Structural Carbon Steel, 1,645,000 pounds.

Copies of plans, specifications and other contract documents, are on file and open to public inspection at the offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on 17 April 1950. Plans, specifications and other contract documents will not be available before this date for inspection or for mailing to prospective bidders. Copies of specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

Plans and contract documents, exclusive of specifications may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans and contract documents if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

The Pennsylvania Turnpike Commission reserves the right to award each section as a separate contract and/or in any combination of contracts.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE
COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
April 11, 1950

Bids: May 5, 1950 (694)

Sanitary Sewers

NOTICE TO BIDDERS

LATERAL SEWER DISTRICT NO. 15
Village of Freeport, N. Y.

SEALED PROPOSALS will be received by the Board of Sewer Commissioners of the Village of Freeport, N. Y., at the Municipal Building 46 North Ocean Avenue, Freeport, N. Y., at 8:30 P.M., Monday, May 8th, 1950, at which time they will be publicly opened and read and the contract awarded or otherwise as practicable for the construction of Sanitary Sewers, consisting of about 4220 linear feet of 8-inch diameter pipes, together with 5-inch house laterals to curb, manholes and appurtenant structures.

Plans and specifications may be seen and obtained at the Village Office or at the Office of Baldwin & Cornelius Co., Inc., 117 West Sunrise Highway, Freeport, N. Y. They may be taken away by prospective bidders upon deposit of $25.00, which sum will be refunded to Contractors who submit bids.

Each bid must be accompanied by a certified check on a solvent bank or Trust Company in the sum of $4,000.00 made payable to the Village of Freeport. Each bid shall also be accompanied by a consent in writing of a Surety Company authorized to do business according to the Laws of the State of New York.

The Board of Sewer Commissioners reserves the right to reject any or all bids and to accept the bid which they deem to be most favorable to the interests of the Village.

No bidder may withdraw his bid within 45 days after the date set for the opening thereof.

Documents may be obtained by prospective bidders until 4:00 P.M., May 3rd, 1950.

LEO FISHEL
MICHAEL J. COFFEY
EDWARD M. VOELKER
Board of Sewer Commissioners
Village of Freeport, N. Y.

Dated: April 15th, 1950
Edmund T. Cheshire,
Village Clerk

Bids: June 30, 1950 (652)

Big Eildon Project

STATE RIVERS AND WATER SUPPLY COMMISSION, VICTORIA, AUSTRALIA

TENDERS are invited from organizations experienced in the construction of large civil engineering works for the construction of the *BIG EILDON DAM* at Eildon in the State of Victoria, Australia.

The construction of the dam will involve the excavation and placing of approximately 13,000,000 cubic yards of earth and rock-fill in embankment with a maximum height of about 260 feet, approximately 300,000 cubic yards of concrete work, outlet and control works and appurtenant structures, including a *SPILLWAY WEIR* about three miles below the dam.

Contracting organizations are invited to submit *TENDERS* for:—

(a) A Schedule of Rates Contract;
or
(b) A Cost-Plus Contract based on a "Target Estimate" to be submitted by the tenderer.

EXHIBITION DOCUMENTS comprising *GENERAL CONDITIONS OF CONTRACT, PLANS AND SPECIFICATIONS AND CONDITIONS OF TENDERING* together with engineering and geological reports, and general information concerning prevailing wages, rates and employment conditions are available at £10.10.0 per set and will be forwarded to bona fide prospective tenderers on receipt of written applications, enclosing cheque, addressed to—

The Secretary,
State Rivers and Water Supply Commission,
100-110 Exhibition Street,
MELBOURNE, C.1.
VICTORIA, AUSTRALIA.
or
The Agent-General for Victoria,
Melbourne Place,
Strand,
LONDON, ENGLAND.

TENDERS endorsed "Tender for Construction of Big Eildon" will be received by the Secretary, State Rivers and Water Supply Commission at 100 Exhibition Street, Melbourne, until 12 noon on June 30, 1950. A preliminary deposit of £A1,000, payable at Melbourne, must be lodged with the tender and will subsequently be refunded to unsuccessful tenderers.

Lowest or any tender not necessarily accepted.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. 2970) will be received by Bureau of Reclamation, Phoenix, Arizona, May 4, 1950, and then publicly opened for furnishing labor and equipment and performing all work for the installation of conductor and overhead ground wire on the Davis Dam-Coolidge 230-kv. transmission line, Davis Dam Project, Arizona-Nevada. The work is situated between Davis Dam, Nevada, and Prescott, Mesa, and Coolidge, Arizona. The work will consist of stringing conductor and overhead ground wires for approximately 280 mi. of 230-kv., 3-phase, single-circuit steel-tower lines; and other work. Time allowed for completion will be 120 days. For particulars, address Bureau of Reclamation, Aviola Building, Phoenix, Arizona; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.

(693)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. 2967) will be received by Bureau of Reclamation, Lewiston, Idaho, May 4, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Clearwater Reservoir, Lewiston Orchards Project, Idaho. The work is situated approximately 6 miles southeast of Lewiston, Idaho. Principal items are approximately 11,000 cu. yds. excavation; 1,700 lin. ft. drains; 835 cu. yds. reinforced-concrete for reservoir; furnishing and installing metal pipe and valves; and other work. Time allowed for completion will be 120 days. For particulars, address Bureau of Reclamation, Lewiston, Idaho; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.

(692)

(Continued on page 115)

U. S. Government
(Continued from page 114)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. 2572) will be received by Bureau of Reclamation, Yuma, Arizona, May 9, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Earthwork, Canal Lining, and Structures—Mohawk Canal, Sta. 0+98.66 to Sta. 15+47+91.63 and Protective Dike No. 1, including the Outlet Channel—Wellton-Mohawk Division—Gila Project, Arizona. The work is situated from 25 mi. to 50 mi. east of Yuma, Arizona. Principal items are approximately: constructing embankments, protective dike, and outlet channel, 3,486,000 cu. yds.; canal excavation, 3,317,000 cu. yds.; concrete canal lining, 71,900 cu. yds.; furnishing and placing reinforcement, 819,560 pounds; furnishing and laying concrete pipe, 1,491 lin. ft.; installing gates and furnishing and installing metalwork, 63,255 pounds; and other work. Time allowed for completion will be 750 days. For particulars, address Bureau of Reclamation, Yuma, Arizona; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(620)

OFFICIAL PROPOSALS

Bids: May 8, 1950 (689)

Sanitary Sewers

NOTICE TO BIDDERS

LATERAL SEWER DISTRICT NO. 13
VILLAGE OF FREEPORT, N. Y.

SEALED PROPOSALS will be received by the Board of Sewer Commissioners of the Village of Freeport, N. Y., at the Municipal Building, 46 North Ocean Avenue, Freeport, N. Y., at 8:00 P.M., Monday, May 8th, 1950, at which time they will be publicly opened and read and the contract awarded as soon thereafter as practicable, for the construction of Sanitary Sewers, consisting of about 29,930 lineal feet of 8-inch diameter pipes, together with 8-inch house laterals to curb, manholes and appurtenant structures.

Plans and specifications may be seen and obtained at the Village Office or at the Office of Baldwin & Cornehlsen Co. Inc., 117 West Sunrise Highway, Freeport, N. Y. They may be taken away by prospective bidders upon deposit of $25.00, which sum will be refunded to Contractors who submit bids.

OFFICIAL PROPOSALS

Each bid must be accompanied by a certified check on a solvent bank or Trust Company in the sum of $20,000.00, made payable to the Village of Freeport. Each bid shall also be accompanied by a consent in writing of a Surety Company authorized to do business according to the Laws of the State of New York.

The Board of Sewer Commissioners reserves the right to reject any or all bids and to accept the bid which they deem to be most favorable to the interests of the Village.

No bidder may withdraw his bid within 45 days after the date set for the opening thereof.

Documents may be obtained by prospective bidders until 4:00 P.M., May 3rd, 1950.

LEO FISHEL,
MICHAEL J. COFFEY
EDWARD M. VOELKER
Board of Sewer Commissioners
Village of Freeport, New York

Dated: April 11th, 1950
Edmund T. Cheshire,
Village Clerk

(Continued on page 123)

EMPLOYMENT

REPLIES (Box No.): Address to office nearest you
NEW YORK 330 W. 42nd St., 18
CHICAGO 520 N. Michigan Ave., 11
SAN FRANCISCO 68 Post St., 4

CIVIL SERVICE

SANITARY AND Water Pollution Control Engineers. Technical or administrative positions available. 2 to 8 years experience sanitary and public health engineering in treatment and disposal of sewage and industrial wastes plus college degree in sanitary, public health, chemical or civil engineering. Must be eligible for California State license. Many positions in California State Government are beginning annual salaries $4,092 to $5,256. Official application must be filed by May 20. Write at once to Dept. B, Recruitment Section, State Personnel Board, 1015 L Street, Sacramento 14, California.

WANTED: ENGINEERING assistant for Mayor of City of North Adams, Massachusetts. Must have broad experience in all phases of municipal engineering. Salary six thousand dollars per year. Submit written statement setting forth age, education and past experience to Mayor's Office, City Hall, North Adams, Massachusetts.

POSITIONS VACANT

WANTED: EXPERIENCED Structural Designers capable of taking responsible charge of work. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

SALES ENGINEER Wanted, to represent a well-established manufacturer of water works equipment in the state of N. Y. and N. J. Must be an experienced salesman or have water utility operating experience. Permanent position, salary and bonus. Interview arranged on basis of letter stating educational background, experience, present salary desired and other pertinent information. If possible, enclose a recent photograph and reference. Replies held in confidence. P-6551, Engineering News-Record.

STRUCTURAL STEEL Designer and Estimator wanted by leading central west fabricator. Permanent position and good opportunity with large well established and growing company. Please state qualifications, past experience and salary requirements. P-6104, Engineering News-Record.

WANTED: ESTIMATOR by General Contracting Firm in Central Pennsylvania. Applicant must be experienced in all types of general building construction. Age between 30 and 40 preferred but not essential. Advise educational experience and salary expected. P-6145, Engineering News-Record.

STRUCTURAL DRAFTSMAN, first class, long experience required. Good salary, steady work. Reply by letter to City Iron Works, Inc., 250 New Park Ave., Hartford 6, Conn., or telephone 33-2696.

WANTED
2 Structural detailer—checkers

Permanent jobs for good men with experience in all types of bridge and building work.

Apply by letter, giving resume of experience, also salary desired.

PAXTON & VIERLING IRON WORKS
P.O. BOX 1085 OMAHA, NEB.

ESTIMATOR

Experienced ENGINEER, familiar with Oil Refinery design and capable of estimating process equipment from flow diagrams.

Give full information, experience record and salary expected.

ARTHUR G. McKEE & CO.
2300 CHESTER AVE.
CLEVELAND 1, OHIO

WANTED SUPERINTENDENT

for sewage and waterworks by old and well-established firm, operating principally in Indiana, but planning expansion. Write only for interview. State age, experience, qualifications, reference and salary expected.

P-2548, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
BRIDGE DESIGNERS,
DESIGNER DRAFTSMEN, RESIDENT
HIGHWAY ENGINEERS, SOILS ENGINEER
Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period 24 months. Location Eastern or Western Pennsylvania.

P-2412, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

POSITION VACANT

LARGE CONSTRUCTION Company requires services of man with wide experience in railroad construction. Must be capable of estimating costs and supervising construction. Civil Engineer preferred but not essential. Excellent prospects for permanent man. Give details of experience, with references, and state salary expected, and when available, in first letter. Apply to P-6345, Engineering News-Record.

BATCHING AND Concrete plant designer and production man, 35-45, preferably with Blaw-Knox or Butler bin experience, for permanent position at San Antonio, Tex. Salary $500/month with $12,000 guarantee through profit participation. P-6251, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

MANUFACTURERS REPRESENTATIVES Needed. Old, established manufacturer of road machinery in mid-west has opportunities for energetic men in field of sales and service management; men 25 to 38 years of age with experience in operating, servicing or selling construction machinery preferred. College education desirable. Experience in letter and mail with recent photograph. RW-6304, Engineering News-Record.

EMPLOYMENT SERVICE

ENGINEERS: UNIVERSITY Teaching, Civil, Sanitary, Highway, Structures, Others. All ranks to $8000. N. Y., Calif., others. Give photo, qualif. Cline Teachers Agency, East Lansing, Mich.

POSITIONS WANTED

GENERAL FOREMAN, Shaft, tunnel, quarry, dam, sewer, close open. General excavation rock. Speak Spanish. Avail. May 1st. EW-8154, Engineering News-Record.

CIVIL ENGINEER with 25 years experience in design, estimating and construction supervision. Considerable experience in earthwork, roads, streets and bridges. Desires change in employment. Southeast preferred. PW-6626, Engineering News-Record.

BS CIVIL ENGINEERING, 2 yrs. experience surveying and drafting in strip mining, city engineering and aerial mapping. 3 married, desires position with city engineer or consultant. PW-6146, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT and Engineer wants job in South or Southwest with firm engaged in heavy construction and/or industrial buildings. Experience includes among other activities, foundations, pile and caissons, highways, paving, highways and streets, industrial buildings, cement plant and grain elevators, and many other activities. Not a whizbank but just an ordinary engineer with a high initiative rating. For immediate contact call Superintendent Logan, 6565, Kansas City, Mo.

(Continued on page 116)

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION:
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

NEW ADVERTISEMENTS received by April 24th will appear in May 4th issue subject to limitation of space available

POSITIONS WANTED
(Continued from page 115)

CONSTRUCTION SUPERINTENDENT estimator. Capable of managing complete office and field. Specializing in industrial and heavy construction also experienced in commercial and public building. Age 36. C.E. degree. PW-6292, Engineering News-Record.

GRAD. C.E. structural, age 28, 2½ yrs. reinforced concrete design and sewer work with a sanitary consultant. 9 months highway surveys. Midwest location preferred. PW-6247, Engineering News-Record.

CIVIL ENGINEER Reg. P.E.L.S. Twenty years experience design and construction highways, railroads, dams, sewers, pumping plant layout, scheduling and supervision building construction. Now employed. Desire connection leading to responsible permanent position, preferably east, reporting activities. Please give full details. PW-6317, Engineering News-Record.

MECHANICAL SUPERINTENDENT. Twenty-five years experience with erection operation and maintenance of heavy industrial construction and mining equipment. Past six years on Latin American operations. Speak Spanish fluently. Will go anywhere. Immediately available. PW-6318, Engineering News-Record.

STRUCTURAL DESIGN Engineer. Steel and reinforced concrete frames and foundations. Power plants, commercial and industrial buildings and industrial utilities such as bins, hoppers, tanks, conveyors, ducts, stacks, castings, etc. Long, varied experience includes preliminary layouts, estimates, all phases of design to finished design details, shop details, specifications, correspondence, and executive contacts. Present location New York City. Available locally May 1st for design service or as local consultant and representative for out of town firm. Alternatively would be interested in a suitable opportunity elsewhere. PW-6338, Engineering News-Record.

SUPT. OR Assistant; shaft, tunnel, dam, quarries, sewer, tunnel, staff of, all kinds specialists. Speaks Spanish. United States or overseas. Avail. May 1st. PW-6125, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT: Broad experience in heavy and industrial construction, foundation, mass and reinforced concrete. Responsible charge of large operations. PW-6191, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ENGINEER-EXECUTIVE. CE and ME background, good organizer and administrator, 27 years of experience in major development programs, hydro, steam, industrials, bridges. Now in private partnership. Seek broader opportunities and responsibilities in executive, industrial development, government or private, domestic or foreign. PW-6134, Engineering News-Record.

STRUCTURAL ENGINEER registered 25 years, design construction buildings subways, docks, seeks responsible position anywhere. PW-6225, Engineering News-Record.

CIVIL ENGINEER BCE 1946, age 24, married. 4 years varied experience construction in U.S. and Far East. Speak Spanish. Prefer Foreign. PW-6236, Engineering News-Record.

SANITARY ENGINEER Executive. Masters Degree, P.E. licensed, 28 years intensive experience in detail and supervision of investigations, reports, design, specifications and construction of water supply, water treatment, sewers, sewage and waste treatment and drainage. Foreign experience. Can furnish references testifying ability to handle men and produce results on projects from inception to completion. PW-6229, Engineering News-Record.

ELECTRICAL DESIGNER, Draftsman, field engineer, 12 years exp. design and supervision electrical and industrial plant installation. PW-6258, Engineering News-Record.

SALES REPRESENTATIVE or AGENT

PREFABRICATED METAL CONCRETE FORMS, etc.

One of the nation's outstanding fabricators of prefabricated metal forms for all types of concrete work is in the process of organization expansion.

To a competent representative we will give training, assistance, drawing account, and protected territory.

Requirements: Experience in concrete work. Ability to read plans. Familiarity with contractors and their problems. Full-time devotion to following up all suitable construction in the territory. No high pressure undesired.

What we offer: A profitable and permanent connection with an outstanding and nationally known fabricator of concrete forms of all types. An opportunity to make substantial earnings in a fast-growing business. Pleasant association, training, engineering service, and field instruction service.

When replying please give full particulars so that an appointment to be made from first letter.

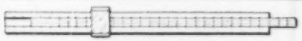
RW-6324, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WANTED
BRIDGE DESIGNERS, DESIGNER DRAFTSMEN, RESIDENT HIGHWAY ENGINEERS, SOILS ENGINEER
Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period, 24 months. Location, Eastern or Western Pennsylvania.
P-6192, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

ESTIMATOR
Wanted by Phila. firm for large sewers, bridges, etc. Must have had experience with contractors in similar work. State salary, experience and when available.
P-2299, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WANTED SUPERINTENDENT
For Sewage and Water line construction operating principally in Indiana. Write only for interview, giving experience in the above line of work, age, reference, salary expected.
P-6108, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

GRAVEL PLANT SUPERINTENDENT
Wanted for operating and managing portable and permanent plants in Indiana and Michigan. State experience, references and salary.
P-6206, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.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TECHNICAL WRITER-Editor-Civil engineering background, national magazine experience, desires part-time assignments editing house organs, preparing trade-paper advertising and promotional programs, preparing operating handbooks, training texts. Can prepare and handle all details. PTWW-6170, Engineering News-Record.

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DESIRE CONSTRUCTION equipment sales connection with eventual sales management in mind. Have plenty experience in the equipment business and as a contractor's superintendent and still young. Reply SA-6114, Engineering News-Record.

SALES ENGINEER desires technical sales with Allis-Chalmers Mpls-St. Paul area. Machine tool design and sales exp. Technical appraisal exp. most types buildings and machinery. Eng. education, Age 31, good earnings record. SA-6246, Engineering News-Record.

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1950 (8th) Edition
A 92-page booklet of tabulated construction costs revised as of January 1950. 1500 items alphabetically arranged and broken down for labor and material. Concise. Comprehensive. *Up-to-date. Handy.* $2.50 Postpaid.
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CRANES & SHOVELS

BUCYRUS-ERIE, Model 22B, ¾ yard transit crane, mounted on STERLING 10 wheel carrier, 30' boom, crane and clamshell equipment, but no bucket. BUDA gas engine on crane. WAUKESHA engine on carrier. Mfg. in 1949. In excellent condition.

LORAIN, Model 40 CRANE, 30' boom, powered by 6 cyl. WAUKESHA model ML gas engine. Mounted on 10 wheel MACK TRUCK. Made in 1937. In good condition.

LORAIN, Model TL-20 CRAWLER, powered by WAUKESHA gas engine, 30' boom, clamshell equipment and lifting crane equipment. Made in 1948. In excellent condition.

P & H Model 600, 1¼ yard CRAWLER Shovel powered by gas engine. Mfg. in 1932. In operating condition.

TRACTORS

ALLIS-CHALMERS, Model HD-7 TRACTOR, 63" tread, canopy, starter, Gar Wood hydraulic bulldozer. Mfg. in 1947. In good condition.

ALLIS-CHALMERS, Model HD-5 Tractor-Shovel. Hydraulically operated bucket, starter, cab, 13" shoes. In good condition.

BUCYRUS-ERIE, Model TD-9 DOZER SHOVEL. New in 1946. In very good condition.

CATERPILLAR, Model D-7 Tractor, 74" gauge, with LE TOURNEAU hydraulic bulldozer, lights, rear Hyster winch and hand starting. In excellent condition.

CLETRAC, Model HG-31 gasoline Crawler Tractor with electric starter, lights and Anderson bulldozer. New in 1949. In excellent condition.

CLETRAC, Model HG-42 and hydraulic lift snow plow, Gar Wood rear cable winch. In good condition.

CLETRAC, Model DG, 15" shoes, 48" tread, electric starter, crank case guard, with HEIL hydraulic bulldozer. New in 1945. In operating condition.

INTERNATIONAL-HARVESTER, Model 14, heavy duty front axle with spring, electric starter, muffler, 1 set rear wheel weights. Tires 6.00x20, 8 ply front, 12.00x24-6 ply rear. Trojan bulldozer. New in 1948. In good condition.

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—double drum, 18' boom
—5 ton capacity,
—mounted on solid rubber tires.

INTERNATIONAL HARVESTER, Model TD-6, 50" tread, standard attachments and B-E hydraulic bulldozer. New in 1946. In fair condition.

INTERNATIONAL HARVESTER, Model TD-9, 44" tread and B-E hydraulic bullgrader. Mfg. in 1940. In good condition.

INTERNATIONAL HARVESTER, Model TD-14, 74" tread, 18" shoes, standard attachments and ISAACSON hydraulic bulldozer. New chains, rear sprocket, top and bottom rollers. New in 1947. In good condition.

INTERNATIONAL HARVESTER, Model TD-14, with HUGHES-KEENAN ROUSTABOUT crane. New in 1942. In fair condition.

INTERNATIONAL HARVESTER, Model TD-18, 74" tread. With electric starter and lights, standard equipment and ISAACSON hydraulic bulldozer. New in 1947. In good condition.

CONCRETE MIXERS

CMC, Model 7S, End Discharge concrete mixer, complete with skip, no tank, powered by Hercules gas engine, mounted on pneumatic tired wheels. Mfg. in 1940. In operating condition.

JAEGER, Model 6S, End Discharge, Concrete mixer. Complete with tank, skip, powered by 4 cyl. HERCULES gas engine, mounted on 2 pneumatic tired wheels. In excellent condition.

JAEGER, Model 11S, End Discharge concrete mixer. Complete with tank, power skip, 4 cyl. WISCONSIN air-cooled gasoline engine. Mounted on 2 pneumatic tires. Mfg. in 1946. In excellent condition.

KWIK-MIX, Model 11S, End Discharge Concrete Mixer. Complete with water tank, power loader, powered by 4 cyl. LE ROI radiator cooled gas engine. Mounted on 2 pneumatic tired wheels. In excellent condition.

REX, Model 11S End Discharge Concrete Mixer, Complete with water tank, power loader, Wisconsin 4 cylinder gas engine. Mounted on 2 pneumatic tired wheels. New in 1947. In good condition.

REX, Model 11S, End Discharge Concrete Mixer, complete with power loader, water tank, 4 cyl. WISCONSIN engine. Mounted on 2 pneumatic tired wheels. New in 1948. In good condition.

REX, Model 16S End Discharge, concrete mixer, Complete with power loader, water tank, 4 cyl. WISCONSIN air-cooled gas engine. Mounted on 4 pneumatic tired wheels. New in 1948. In excellent condition.

COMPRESSORS

INGERSOLL-RAND, Model 500, 2 stage Air compressor, WAUKESHA gas engine, clutch, electric starter, 4 solid rubber tires. New in 1939. Good condition.

INGERSOLL-RAND, Model 500, 2 stage Air compressor, WAUKESHA gas engine, clutch, electric starter, 4 pneumatic tires. Also Diesel conversion assembly. New in 1939. Reconditioned.

MISCELLANEOUS

PUMPCRETE, DOUBLE, Model 180, powered by WAUKESHA, 6 cyl. engine with remixer powered by LE ROI gas engine. Few fittings, no pipe. On skids. Made in 1939. In good condition.

HOUGH, Model HLA Payloader with 62" hydraulic bucket. Mfg. in 1947. In excellent condition.

TROJAN PATROL GRADER with cab, blade, scarifier, bulldozer and leaning front wheels. New in 1948. In excellent condition.

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AN AUCTION
CONSTRUCTION EQUIPMENT
Mon., April 24, 10:30 A. M.

Dispersion Auction of equipment, located at Perry, Iowa, selling because owner is moving to Arizona. Each piece is in good condition and is ready to be put on the job. B4 Link Belt Speeder; LS85 Link Belt Speeder with 40' boom; LS85 LBS, shovel attach, inside cab; ¾ yd. to 1¼ yd. buckets; Jr. Tandem Gravel Plant; Ia Mfg. Co. plant with 1036 jaw and 18x24 roll; 15x24 Ia Mfg. Co. primary crusher, screen & apron feeder; Ia Mfg. Co. crushing and screening plant, 1036 jaw & 24x16 roll; D7 Cat and Dozer; 2 AC L Cats, dozer, pto; Letourneau for D4 cat; 2 '48 Ford Trucks; F7 & F8, '46 White; 2 '42 GMC trucks, 4x6; '40 GMC 6x6; '41 Diamond T 6x6, many other trucks; trailers; 20 ton Lowboy; Hyster Winch to fit D7 or D8 cat; Many other pieces of equipment large and small, machine tools and office equipment. Write or wire auctioneers for complete sale bill. Each piece positively sells to highest bidder.

Perry Construction Co., Inc.
C. A. Emery, President, Owner

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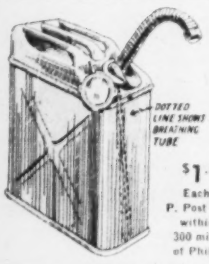
THE AUCTIONEERS
314 Sharp Bldg. Lincoln, Nebr.
Ph 2-7045



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P & H Model 1055 LC Crane Crawler
Mounted 100 ft. boom and 25 ft. gib
250 HP Buda Diesel A-1 condition

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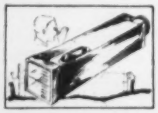

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FS-6016, Engineering News-Record
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Sealed proposals will be received by Rufe B. Newman, Jr., Deputy Commissioner for Engineering and Construction, Community Facilities Service, General Services Administration, Room 5143, General Services Building, Washington, D. C., until 11:30 o'clock A.M. Eastern Standard Time, on May 17, 1950, for the construction of the following work at Charlotte Amalie, St. Thomas, Virgin Islands, comprising approximately the following quantities in the order listed:

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ST. THOMAS, VIRGIN ISLANDS

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4,600 lin. ft., Creosoted Timber Guard Rail (8" x 10")
2,200 cu. yds., "A" Concrete
320,000 cu. yds., Earth Fill
5,500 lin. ft., Pipe in Storm Sewers (15" to 30")
1,200 cu. yds. Rubble Masonry
20 Manholes, Inlets and Catch Basins
2,700 lin. ft. Combined Curb and Gutter
5,500 sq. yds. 6" Concrete Pavement

At which time and place the proposals will be publicly opened and read aloud. Bids received after closing time of bid opening will be returned unopened.

Plans and specifications and other proposed contract documents are open for public inspection at the District Engineer's office, Charlotte Amalie, St. Thomas, Virgin Islands; the District Engineer's office, 501 Banco Popular Building, San Juan, Puerto Rico, and Room 5130, General Services Building, Washington, D. C.

A set of such documents may be procured from the office of R. L. Kenan & Associates, Consulting Engineers, Bell Building, Montgomery, Alabama, upon deposit of $50.00, all of which will be refunded to bona fide bidders upon the return of plans and specifications, in good condition, within seven days from date of bid opening.

To parties who procure plans and specifications upon payment of $50.00 and who do not submit a bid, $40.00 will be refunded *provided same are returned within seven days from date of bid opening. No refund will be made for return after this time.*

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No proposal may be withdrawn after the scheduled closing time for receipt of bids for at least 30 days.

The Government reserves the right to reject any and all proposals and to waive informalities with respect thereto.

PERE F. SEWARD
Commissioner
(681)

Notice to Contractors

GENERAL SERVICES ADMINISTRATION
Community Facilities Service
Washington 25, D. C.

Sealed proposals will be received by Rufe B. Newman, Jr., Director, Public Works Construction Division, Community Facilities Service, General Services Administration, Room 5143, General Services Building, Washington, D. C., until 11:00 o'clock A.M. Eastern Standard Time, on May 24, 1950, for the construction of telephone and radio link facilities and buildings on the islands of St. Thomas and St. Croix (U. S. Virgin Islands) as follows:

PROJECT No. 53-111, ST. THOMAS
TELEPHONE SYSTEM
(Project No. 12, Public Law 510, 78th Congress)

Subproject 13A — Outside Telephone Plant, St. Thomas
Subproject 13B—Inside Telephone Plant, Charlotte Amalie
Subproject 13C—Subscriber Telephone Plant, St. Thomas
Subproject 13E—Radio Link Stations, Virgin Islands
Subproject 13X—Telephone Exchange, Charlotte Amalie

PROJECT No. 53-309, ST. CROIX
TELEPHONE SYSTEM
(Project No. 26, Public Law 510, 78th Congress)

Subproject 26A — Outside Telephone Plant, St. Croix
Subproject 26B—Inside Telephone Plant, Christiansted and Frederiksted
Subproject 26C—Subscriber Telephone Plant, St. Croix
Subproject 26X—Telephone Exchanges, Christiansted and Frederiksted

At which time and place the proposals will be publicly opened and read aloud. Bids received after closing time of bid opening will be returned unopened.

Plans and specifications and other proposed contract documents are open for public inspection at the District Engineer's office, Charlotte Amalie, St. Thomas, U. S. Virgin Islands; the District Engineer's Office, 501 Banco Popular Building, San Juan, Puerto Rico, and Room 5120, General Services Building, Washington, D. C. A set of such documents may be procured from any of the above-listed offices upon deposit of $50.00, all of which will be refunded to bona fide bidders upon the return of plans and specifications, in good condition, within seven days of date of bid opening.

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No proposal may be withdrawn after the scheduled closing time for receipt of bid(s) for at least 30 days.

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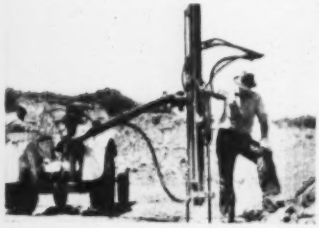
HEAVY-DUTY MACHINE reduces undergrowth and trees up to 8 in. in diameter to small fragments by means of rapidly rotating 19½-lb flails. Under the impact of the flails, the woody fibers of all growth are ruptured, the stalks or trunks broken, and the whole reduced to mulch and deposited on the cleared ground. Topsoil is not disturbed, and regrowth is retarded due to the fragmentation of trunk fibers at the root junctures. Operating principle of the Bushwacker is relatively simple: The chrome-manganese steel flails are attached by chains to a revolving steel drum mounted on a shaft at the front of the machine. The drum, powered by a 168-hp General Motors diesel engine, revolves at 900 rpm imparting a forward speed of 11,550 fpm to the 20 flails. Additional crushing of ruptured growth is provided by further contact with the flails as material is carried back against the drum housing. Carrier vehicle is a standard crawler tractor modified for the special requirements of the Bushwacker. Gage wheels supporting front end of machine move in a vertical plane and regulate height of cut. The Bushwacker is 10 ft wide, 21 ft long, and clears a swath 6 ft wide at a speed of 1½ mph. It has a total weight of 14 tons.—AMERICAN STEEL DREDGE CO., INC., 2511 TAYLOR, FORT WAYNE 1, IND.



Self-Propelled Wagon Drill

One-man-operated self-contained self-propelled wagon-drilling unit consists of a swinging boom which extends out from a Le Roi 105 Tractair tractor-compressor, and a universally mounted wagon-drill guide shell for 6-ft steel change. The Le Roi-Cleveland H10 45-lb-class sinker operates off the 105-ft compressor. With truck-mounted Mobildrills, where 160-cfm capacity is available, a heavier H23 80-lb-class sinker may be used. The Mobildrill will drill angle, vertical, or horizontal holes at any elevation and can be equipped with an air-motor-powered boom. Drill, blow, and feed controls are centrally located at the guide shell.—LE ROI CO., 1700 S. 68th ST., MILWAUKEE 14, WIS.

Hydraulic-Equipment Oil

Gulflite oil 5W is recommended for use under extreme conditions of heat and cold in hydraulic motors, pumps, and similar equipment. It has a viscosity of 90-100 S. U. S. at 100-deg F. The oil maintains its body, heavy load-carrying capacities, and non-foaming and free-flowing characteristics throughout the entire range of temperatures in which such equipment is normally operated. The oil is compounded with selected additives which retard oxidation and increase its capacity to lubricate parts under extremely heavy loads.—GULF OIL CORP., GULF BLDG., PITTSBURGH, PA.

Improved Moto-Bug for 1950

Large steering wheel on 1950 model Moto-Bug increases ease of handling and maneuverability. Steering gear ratio has been increased from 2:1 to 4:1. The Moto-Bug has a rated hopper capacity of 10 ft, or 1,200 lb on the platform body. It is powered by a standard 4-hp gasoline engine and travels at speeds of 1½ to 4 mph, both forward and reverse.—KWIK-MIX CO., PORT WASHINGTON, WIS.

Cable-Operated Scraper

Four-wheel cable-operated scraper has a 24.5-yd heaped (19.2 struck) capacity. The Model 625 open-bowl scraper is designed for use with the Allis-Chalmers HD-19 tractor. Positive forced ejection is accomplished by a sliding end gate. Heavy-duty springs return ejector to digging position. Cutting edge is bowed and of three-piece construction. End and center sections are reversible. Boiling-action loading assure full loads with less tractive effort. Three tire options are offered to accommodate all types of digging conditions where scraper flotation becomes a problem. The 625 has a 78-in. gate opening.—GAR WOOD INDUSTRIES, INC., DEPT. 022-I, FINDLAY DIVISION, FINDLAY, OHIO.

Wood-Piling Extractor

Designed to adjust to any size or shape, the Downs pile puller can be

(Continued on page 126)

There's a Reason for

- **smoother spooling**
- **easier handling**
- **longer life**

When you use...

-Preformed-
"HERCULES"
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WIRE ROPE

... In fact, there are many—*and definite*—reasons why you can depend on Preformed "HERCULES" (Red-Strand) Wire Rope for trouble-free and economical service... First, there is the "Leschen Standard of Quality" which applies to all materials used, and which is rigidly maintained by exacting tests ... Then there are manufacturing facilities ... Strict Supervision... Experience. To this, add the advantages of the Preforming process, and the result is a wire rope that is tops in performance.

Being made in Round and Flattened Strand constructions, there is a correct type for every wire rope requirement in every industry.

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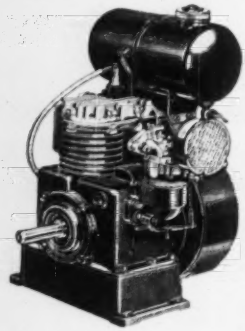


Model K7-1, 1½ H.P. 4-cycle, single cylinder, air-cooled. Length 14", width 14", height 17". Weight 58 lbs.

POWER FOR:

- Concrete Mixers
- Gravel Graders
- Road Oilers
- Conveyors
- Compressors
- Pumps
- Elevators
- Chain Saws
- Drills
- And other uses.

Four-Cycle, Air-Cooled
KOHLER ENGINES
Compact • Quick-Starting Reliable

Kohler Engines are designed, engineered and built to give the same dependable, economical service that has won world-wide acceptance for Kohler Electric Plants in construction and other industries. Made in several sizes, they are suited to a wide range of uses. Kohler engineers will gladly assist in working out applications for your particular requirements. Write for information. Dept. 21-V, Kohler Co., Kohler, Wisconsin. Established 1873.

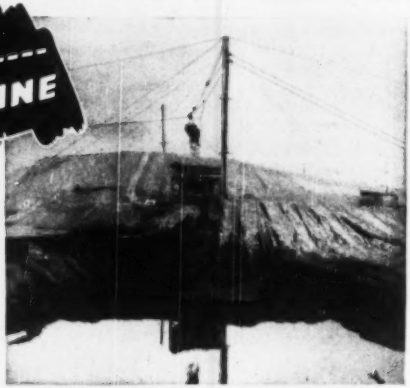
KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS • AIR-COOLED ENGINES

ONE MAN—— ONE MACHINE

Solved This Settling Pond Problem
FOR GOOD!

A settling pond is useful only so long as material has room to settle; when it's filled with a rubbery sludge there's trouble. Faced with such a problem in TWO ponds, a coal mine manager began looking around for equipment which would quickly, cheaply, and efficiently clean out the ponds, without excessive manpower. After much experimentation, he found his answer in a Sauerman Stackline Cableway. Picture shows Sauerman Cableway with 1 cu. yd. bucket dumping sludge into hopper. Bucket carries spoil 300 to 400 ft.



The above Sauerman machine has worked out perfectly for its owner, paying for itself many times over. *Sauerman can do the same for you* on excavation, strip mining, bulk material handling, etc.! Dig, haul, dump, *all in one operation*, with one man at the controls. Sauerman equipment is flexible, can be readily adapted to meet any new conditions.

Write Today for Catalog

SAUERMAN BROS., INC.

532 S. CLINTON ST. • CHICAGO 7, ILLINOIS

used for extracting wood piling, poles, or posts. Inner surface of the puller consists of a series of heavy knife edges for biting into the pile transversely to the grain of wood, providing a positive hold for pulling pilings that are hard to grip due to creosote coating, marine growth, grease, or odd shapes. Large handles aid workmen in setting puller in place.—Downs Crane & Hoist Co., 540 W. Vernon Ave., Los Angeles, Calif.

Crawler-Mounted Shovel

Use of crawler-type traction increases applications of the Dempster-Diggster hydraulic shovel and loader. The Type CR, Model 100, features hydraulic crowd and hoist. Four interchangeable buckets of two types are available: The ¾ and 1¼ yd (heaped) digging buckets; and the 1¼ and 2 yd (struck) buckets for handling loose materials. Gross weight of Diggster is 21,480 lb. Photo shows unit with 1 yd of hard chert it has dug from a 15-ft bank.—Dempster Bros., Inc., Knoxville, Tenn.

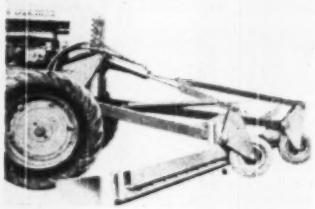
Lightweight, Portable Auger

Ground Hog Digger uses slow speed and limited feed to produce holes faster with less horsepower than fast-turning auger under pressure. Power is provided by a 5-hp air-cooled engine which drives the unit cutter head by means of a V-belt and automatic safety clutch. Digging augers are manufactured in diameters from 6 to 12 in. in 1-in. intervals. The Model B is mounted on a dolly-type chassis; the Model FX, for deeper digging, is designed for mounting on truck boom or tripod.—Portable Earth Auger Co., P. O. Box 290, San Bernardino, Calif.

Aerated Bulk-Cement Trailer

Air blown through an 18-in. non-movable belt permits unloading of

bulk cement at angles as low as 4 deg. By combining aeration and hydraulic lift, the Gramm trailer permits unloading of cement or other dry powdered materials in unfavorable locations. Even weight distribution between trailer and tractor is achieved by use of the hydraulic lift principle. —Gramm Trailer Corp., Delphos, O.



Hydraulic Windrow Eliminator

Accessory unit increases utility of the Allis-Chalmers' Model D motor grader. The windrow eliminator is designed to recondition road shoulders in one pass by clearing off excess material as the grader moldboard piles it up along the road's edge. Constant control is maintained because the eliminator rides on its own wheels, and blade settings are not affected by up and down movement of the grader. The unit operates off the grader's hydraulic system.—Tractomotive Corp., Deerfield, Ill.

Six-Yard Truck Mixer

Challenge truck mixers are now available in a 5-6 yd. size. All controls for the mixer are located at rear of truck directly above the chassis, eliminating climbing around the mixer when discharging loads. Other features include light weight and use of standard automotive parts throughout. —Cook Bros. Equipment Co., National Distributors, 1515 N. Broadway, Los Angeles, 31, Calif.

Plastic Drawing "Board"

New-type drawing device, made of non-rigid plastic, combines a drawing board, straight edge, and T-square. It is collapsible, flexible, rollable, and portable. The support for the drawing is inserted in notches provided on the straight edge which also holds

(Continued on page 129)

In 1950

as in

1900

1889 — AUDITORIUM HOTEL AND THEATER, Chicago (now Roosevelt College)
1904 — MERCHANTS EXCHANGE BUILDING, San Francisco
1907 — PLAZA HOTEL, New York City
1916 — FRIARS CLUB, New York City
1924 — FEDERAL AMERICAN NATIONAL BANK, Washington, D. C.
Alfred C. Bossom, Architect, NYC
J. H. deSibour, Assoc., Washington
1946 — PLAZA HOTEL, New York City
1947 — BETHEL CONGREGATION, Phoenix, Ariz.
J. H. Welch & Son, Phoenix
1949 — SHAMROCK HOTEL, Houston, Texas
Wyatt C. Hedrick, Architect
Stone & Webster Eng. Corp. Engineers

SHONE® DEPENDABILITY
Belongs in "Prestige" Buildings

TWO GENERATIONS OF LEADING ARCHITECTS HAVE SPECIFIED THE SHONE PNEUMATIC SEWAGE EJECTOR
— knowing that it will do its job for long years to come, quietly, smoothly, efficiently

For automatic, trouble-free handling of crude sewage and waste—30 gpm up to 600 gpm—the famous Shone Pneumatic Ejector is known and trusted throughout the world. Here is a mechanical device which was apparently "conceived in perfection," for since the first Shone was built no change has been made in its basic design—none was needed!

Plus-advantages which have been responsible for the efficiency and dependability of the Shone include:

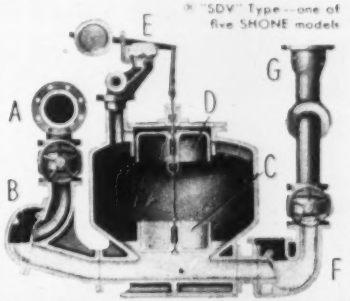
NO SCREENS OR IMPELLERS • NO SEWER GAS, WET WELL OR DANGER OF EXPLOSIONS • NO AIR-TIGHT SHEET METAL FLOATS OR FLOAT SWITCHES • NO GROUNDS DUE TO CONDENSATION IN WIRING CONDUIT AND SWITCH ENCLOSURES

The Shone requires practically no attention. One Shone operated flawlessly for 25 years in a sealed chamber, and another performed perfectly for many years while submerged in a flooded pit. Shones can be operated from distant compressors—any number from a single compressor plant, or from the building air supply.

SPECIAL DESIGNS FOR UNUSUAL REQUIREMENTS

For complete engineering data, write for Bulletin . . . Contains Air Volume and Pressure Table, Sizes, Dimensions, Air Piping Layouts, and other comprehensive specifications. Write today on your regular business letterhead.

* "SDV" Type—one of five SHONE models

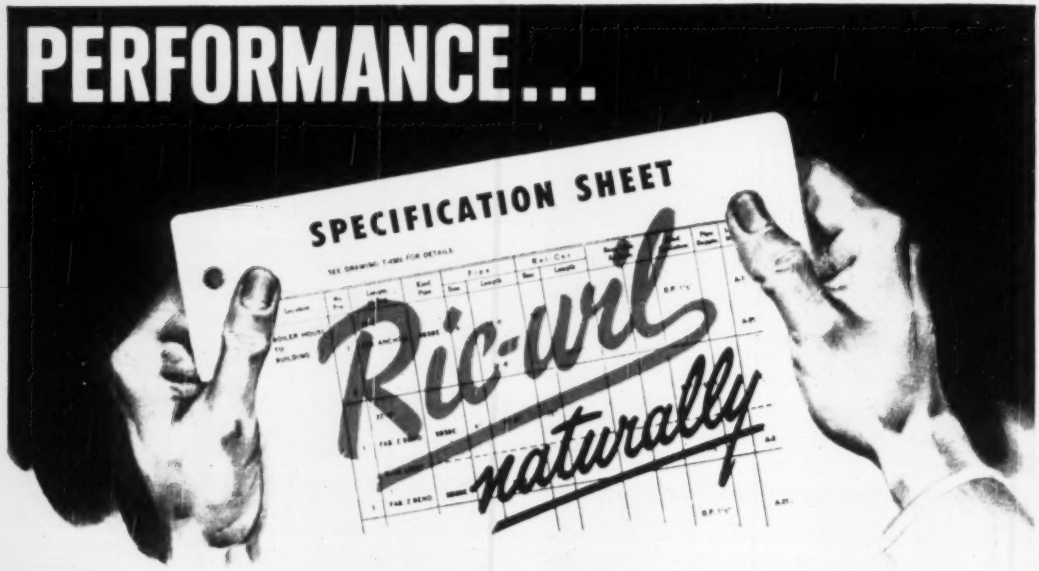
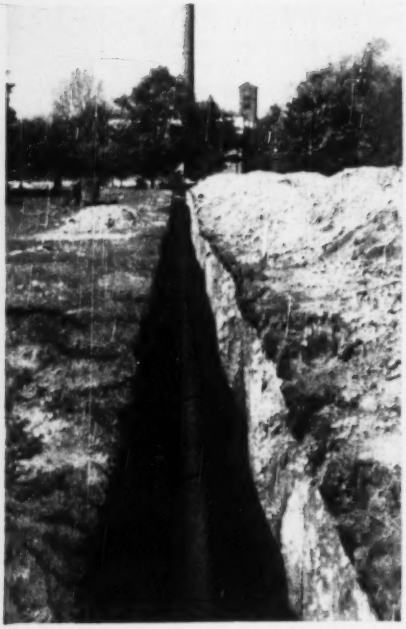


A Inlet pipe
B Inlet Check Valve
C Lower Bell
D Upper Bell
E Pilot Slide Valve
F Discharge Check Valve
G Discharge Pipe

Yeomans Brothers Company, 1445 N. Dayton Street, Chicago 22, Illinois

YEOMANS

PUMPS FOR BUILDINGS, MUNICIPALITIES, INDUSTRIAL APPLICATIONS— and a complete line of Sewage and Waste Treatment Equipment

PERFORMANCE...



Engineers and contractors who have had experience with either underground or outside overhead insulated piping specify Ric-wiL for many reasons.

First, they know that Ric-wiL Piping Systems are specifically designed and prefabricated for quick economic installation. They also know that the Ric-wiL engineering service, backed by forty years' experience in the insulated piping field, is available for planning and field installation assistance.

The high operating efficiency and proven field performance records of Ric-wiL systems are made possible by the finest materials and careful construction of all Ric-wiL products, whether straight-run units or elbow, tee, anchor, or other accessories.

These and other exclusive Ric-wiL features give Ric-wiL Insulated Piping Systems high efficiency performance with low installation and maintenance costs.

For full technical information on Ric-wiL Insulated Piping Systems, call or write the Ric-wiL office nearest you or Dept. 10-S in Cleveland, Ohio.

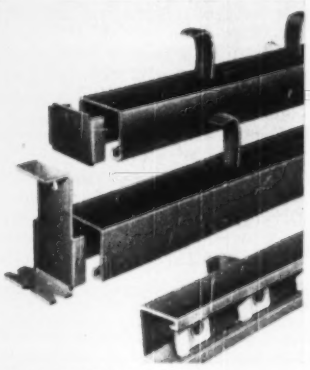
RIC-WIL

INSULATED PIPING SYSTEMS

OVERHEAD — THE RIC-WIL COMPANY · CLEVELAND, O. — UNDERGROUND

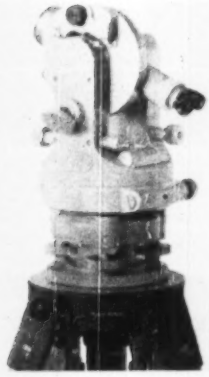
FOR FORTY YEARS THE GREATEST NAME IN INSULATED PIPING SYSTEMS

the drawing paper without the use of thumbtacks. The precision-built T-square is in two parts, so that the ruler may be separated from its guide portion. When disassembled, the complete device fits in a 3x21-in. cylindrical case.—Frank E. de Beu & Co., 3502 Market St., Philadelphia 4, Pa.



Concrete Insert

Attachments are quickly and easily made at any point along channel without disturbing other attachments by use of these lower-cost concrete inserts. This is accomplished by insertion of Unistrut spring nut into channel at point where attachment is desired, and bolting to fitting. The Series P 3000 inserts are available in lengths from 3 in. to 20 ft, and with Type A plain drive-in end caps or Type B anchor-type drive-in end caps equipped with slots for centering and nailing. Load capacity is 2,000 lb per ft with a safety factor of 5.—Unistrut Products Co., 1043 W. Washington Blvd., Chicago 7, Ill.



Auto-Reduction Tachymeter

This instrument is designed for tachymeter work when quick performance of field work is more emphasized than reaching theoretically high accuracies. It permits both distance and difference of altitude to be read by a single reading of the rod; thus reducing tachymeter work to the simplicity of ordinary leveling. The auto-reduction tachymeter is similar to a repetition theodolite with these specifications: Horizontal circle with a 5-in. dia graduated through 360 deg in $\frac{1}{12}$ths; 4.4-in.-dia vertical circle graduated through 360 deg in $\frac{1}{6}$ths, with readings by line microscope to 1 min; and a telescope with a 9.6-in. focal length, internal focussing, and a magnifying power of 20.—Norbert Dienstbey, 478 Water St., New York 2, N. Y.

New Product Briefs

Tractor-tire remover features long handle which gives leverage needed to break the bead under extremely tough conditions. Maker: BeeLine Co., Davenport, Iowa.

Arc-welding electrode is designed for producing fully machinable welds on cast iron. General Electric's W-2075 can be used in all positions on either ac or dc.

Leather hand pads provide maximum protection and comfort in handling brick, tile, metal sheets and other uses where hand injuries are a risk. General Scientific Equipment Co., Philadelphia 32, Pa., supplies the Satti-Mitt Handpads.

Multiple V-belt has a 40-percent increase in horsepower rating over comparable sizes of standard V-belts. The Goodrich belt is also available for use where dissipation of static is essential.

Luminous fluorescent fixture has translucent side panels to direct a portion of the light upward and outward. Guthglow (Edwin F. Guth Co., St. Louis 3, Mo.) has low-brightness Alzak aluminum baffles to shield light from direct view from below.

Dual-purpose steel post serves both as a temporary and permanent support column. An integrated rack is used to make periodic height adjustments during early stages of construction. Maker: The Akron Products Co., Seville, Ohio.

Continental motors announces two small air-cooled engines—the AC-5 developing 2 to 1 hp, and the AC-6 developing 1½ hp.

Water Sterilizer produced by Hanovia Chemical & Mfg. Co., Newark, N. J., provides continuous rapid-flow sterilization at low operating cost. Sterilizer units can be furnished for 110, 220, and 440 v; 25, 50, or 60 cycle.

Low-hydrogen electrode eliminates under-bead cracking. The P&H (Harnischfeger Corp.) line includes 14 different types covering all applications where deposits low in hydrogen are desirable.

Masonry and rock drills in two types are announced by Kennametal, Inc., Latrobe, Pa. The Tri-Point rock drills for drilling granite, sandstone, concrete, etc., have triangular-shaped cutting tips made of vacuum-sintered cemented carbide. The twist-type masonry drills, featuring vacuum-sintered cemented carbide blade, have an angle cutting point to eliminate motionless dead center, and faster spiral for cleaning dust out at an accelerated rate.

Lightweight air-cooled engines developing 2 hp (Model K-2) and 3 hp (Model K12-3) are now available from the Kohler Co., Kohler, Wis.

Air and hydraulic cylinders for medium-duty services utilize a tie-rod construction to give positive protection against leakage at joint of tube and head. Maker: Ledeen Mfg. Co., Los Angeles 15, Calif.

Steel tape-rules (Lufkin Mezurall and Wizard Jr.) now have chrome-clad non-glare satin-finish blades. These chrome-clad blades absorb disturbing light reflections and afford easier reading of all markings and graduations.

Fluorescent lighting fixtures in thirteen matching styles compose the new Sylvania Trim-line family. These can be joined together so closely that they give the appearance of one long sweep of light.

Selective-speed Gearshift drive is a combination, integrally mounted motor and a 4-speed transmission having both primary and secondary gear reductions. Maker: The Lima Electric Motor Co., Lima, Ohio.

Vinyl plastic coating can be applied to wood or metal by brush, spray, or dipping. Calvocal is a variation of Calvinac created particularly for concrete, masonry, asbestos-shingles, plaster, and similar surfaces. Maker: James Lathgow Co., Inc., Los Angeles 22, Calif.

Induced-draft cooling tower is said to provide savings of up to 95 percent in use of water in air-conditioning units. The towers are available in 3, 5, 7½, and 10-ton-capacity sizes. Maker: United States Air Conditioning Corp., Minneapolis, Minn.

MANUFACTURERS' PUBLICATIONS

Mechanized Wheelbarrow – High-speed materials handler is illustrated and described in 4-p folder. Bulletin KT-1 shows the Kal-Truk equipped with concrete hopper and with a flat-bed platform. These illustrations are used to show the versatility of the Kal-Truk in hauling all types of materials. All specifications and dimensions are listed.—KALAMAZOO MFG. CO., KALAMAZOO, MICH.

Guardrails and Bridgerails—Illustrated 16-p booklet shows how Flex-Beam guardrails and bridgerails contribute to economical highway safety. The booklet contains complete technical data for designers of highway guardrails. Features of the Flex-Beam units, discussed in detail, include high impact resistance, prevention of pocketing, and economy and adaptability. Eight pages of basic design data cover physical properties, tensile and beam strength, and load deflections and permanent set values under various loads for the beams and beam joints.—ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

Lumber-Purchasing Guide—Membership directory of West Coast Lumbermen's Assn. contains detailed information on sawmills, remanufacturing plants, timber fabricators, wood pipe and tank manufacturers, and wood-treating plants in the Douglas fir region of Washington, Oregon, and northern California. Included are production capacities, manufacturing and shipping facilities, and percentage production for each species.—WEST COAST LUMBERMEN'S ASSN., 1410 S.W. MORRISON ST., PORTLAND 5, ORE.

Rock-Buster—Impact-type crusher for reducing hard, friable materials is described in 4-p Bulletin 827. The bulletin features a cutaway drawing showing how the 303 reduces material while in suspension by means of a high-speed rotor equipped with stationary hammers. Specifications cover construction, rotor, hammers, shaft and bearings, protection devices, feed chute, and accessibility. General dimensions are also listed.—THE JEFFREY MFG. CO., 923 N. 4TH ST., COLUMBUS 16, OHIO.

Transite-Pipe Installation—Pocket-size guide contains complete information for the installation of Transite pressure pipe. These cover the entire procedure from receiving and handling to pressure and leakage tests. Subjects range from excavating the trench through backfilling and tamping. Line drawings illustrate important operations, and text explains both how and why. In many cases the wrong way is clearly described and labeled along with the recommended procedure. The guide is arranged so that problems are taken up in the order in which they occur on the job.—JOHNS-MANVILLE, 22 E. 40TH ST., NEW YORK 16, N. Y.

Electrode Comparator Chart—Slide-rule-type charts lists all GE welding rods and electrodes, and indicates the type of service for which each is designed. All principal manufacturers' electrodes which are the closest equivalents for the application noted for GE's rod are also listed. Listings are keyed to AWS classification numbers and comparison data may be read directly off the slide rule. AWS class designations are explained on the back of the comparator slide rule to simplify selection of electrodes.—GENERAL ELECTRIC CO., APPARATUS NEWS BUREAU, SCHENECTADY 5, N. Y.

Safety Equipment—General catalog contains a listing of "Everything in Safety". Equipment listed include respiratory devices, eye protectors, hats, gloves, drum pumps, carboy pumps, and miscellaneous industrial safety equipment.—GENERAL SCIENTIFIC EQUIPMENT CO., 2700 W. HUNTINGTON ST., PHILADELPHIA 32, PA.

Self-Lubricating Packings—Principles of self-lubricating packing design, structure and performance, and an analysis of individual packing are described in Bulletin LP-10. Specifications are included for each particular type of packing.—GREENE, TWEED & CO., NORTH WALES, PA.

Liquid-Level Recorders—Engineers file folder contains complete data on liquid-level recording instruments. The file contains information on many types of instruments for use in waterworks, sewerage, irrigation, and other industries. Instruments listed represent a wide range of methods to indicate and record flow and totalized flow.—LEUPOLD & STEVENS INSTRUMENTS, INC., 4445 N.E. GLISAN ST., PORTLAND 13, ORE.

Self-Propelled Belt-Type Loader—Adams Travel-loader picks up and hauls dirt, sod, sand, gravel, oil-mix, surplus scarified material, snow, and other types of material which can be windrowed and will travel up a conveyor belt. Catalog 4914 (8 pp) describes operation of the Travel-loader and lists its component features including the full-floating feeder, adjustable conveyor, and heavy-duty drive unit. The catalog contains a complete list of specifications.—J. D. ADAMS MFG. CO., INDIANAPOLIS, IND.

Dust Collectors—Bulletin 610 describes dust collectors for any system requiring from 200 to 3,600 cfm. Tabulated comparisons of all units in the line list general recommendations of typical wheel sizes that any single unit will handle. Also given is an exact method for determining correct amount of air suction required at any wheel in accordance with New York State Code requirements.—AGET DETROIT CO., ANN ARBOR, MICH.

Automotive Timing Chains—Construction and use of automotive-timing chains are illustrated and described in this 12-pager. Bulletin 49-5 contains a comprehensive description of timing problems and their solution, including an explanation of the need for replacing worn timing chains promptly. Design features of the Duckworth timing chains are described and interpreted in terms of advantages to the user.—CHAIN BELT CO., BALDWIN DUCKWORTH DIVISION, 1633 W. BRUCE ST., MILWAUKEE 4, WIS.

General-Purpose Hoists—Two new catalogs cover the American line of general-purpose hoists. Both catalogs are profusely illustrated with operating pictures as well as illustrations of mechanical parts and assemblies. Catalog 100-H-40 covers hoists with capacities from 5 to 40 hp; Catalog 100-H-55, hoists from 50 to 100 hp.—AMERICAN HOIST & DERRICK CO., 63 S. ROBERT ST., ST. PAUL 1, MINN.

Direct-Flow Pump—Six-page data sheet gives complete information on new 5-in. stroke Triplex direct-flow pump. Information presented includes: Construction and design, specifications, drawings, illustrations, selection chart and table, and drive specifications.—THE ALDRICH PUMP CO., ALLENTOWN, PA.

Waterproofing Compound—Two new catalogs describe the use of Prufcoat for waterproofing masonry surfaces. One bulletin describes the Prufflite line and includes engineering test reports. It also lists several questions (with answers) asked about the use of the material. The other bulletin contains a case history of the use of the material in a New York skyscraper.—PRUFCOAT LABORATORIES, INC., 63 MAIN ST., CAMBRIDGE 42, MASS.

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PERSPECTIVE . . .

Bridge trip of the year

Never before has such an array of spectacular and history-making bridge foundation construction been accessible to the interested visitor as can be seen this summer along a 200-mile stretch of the Atlantic Coast. Three jobs are involved, from north to south: The Delaware River Bridge, near Wilmington, Del., the Chesapeake Bay Bridge, near Annapolis, Md., and the York River Bridge, at Yorktown, Va.

• **Largest caisson**—Only a few facts need be cited to justify top billing for each of the projects in any conceivable exhibition of the techniques of the bridge foundation engineer and constructor. On the Delaware River Bridge, one of the caissons (for the west anchorage of the 2,150-ft suspension span) is the largest ever built. Its plan dimensions, 95 x 221 ft, exceed the 92 x 197 ft of the caisson used for the great central anchorage of the Bay Bridge at San Francisco. It is, however, only 106 ft high, compared to the 220 ft at San Francisco, and the 20 ft water depth is small compared to the 70 ft at the Bay Bridge anchorage.

Still, on the east anchorage foundation at Wilmington, one encounters another record-breaking feature. It is a 99 x 225 ft cofferdam dredged to El —70 and sealed with a continuous pour of 27,000 cu yd of concrete, the largest ever made. It required 7.4 days.

The bridge substructure is being built by Merritt, Chapman & Scott Corp. Consulting engineers are Howard, Needles, Tammen & Bergendoff, with Homer R. Seely is project engineer. (See ENR Jan. 19, p. 36 and Jan 26, p. 28 for articles on these Delaware Bridge foundations.)

The next job encountered on a southbound trip will be just north of Annapolis, where Chesapeake Bay is being bridged for the first time. Beyond its technical features, this new crossing will give Baltimoreans their first easy access to the beaches of Maryland's eastern shore, and permit coastwise travelers to bypass Baltimore, a present traffic obstacle of national reputation.

Although located at the Bay's narrowest point, the bridge will nevertheless require 21,286 ft of structure, including a 1,600-ft suspension span, a 780-ft through-cantilever and a long series of deck cantilevers. With a shipping clearance of 186.5 ft at the suspension span, the bridge will be a landmark, visible for many miles.

• **Four legged caissons**—But the principal interest in the bridge this summer will center in the 28 piers that will be of the bell-bottom caisson type, used heretofore for the Ludlow Ferry bridge over the Potomac River and often called Potomac type piers (ENR Feb. 29, 1940, vol p 306). The caissons, each consisting of four bell-bottomed cylindrical legs joined by diaphragms, will be set on steel H piles, some driven as much as 135 ft into the bay bottom.

Three contractors — Frederick Snare Corp., J. Rich Steers, and Merritt, Chapman & Scott Corp.—divide the main pier work while Booth & Flinn and Baltimore Contractors are handling the approaches. J. E. Greiner Co. is the consulting engineer, with Robert A. Gilmore as project engineer and Bruce Herman as resident engineer.

• **In 80 ft of water**—Last but by no means least is the York River bridge on which a couple of mid-west contractors outbid all of the east coast waterfront experts for the opportunity to sink caissons in water as much as 80 ft deep, exceeded only by one of the piers at San Francisco. Six of these caissons are required, the two biggest being 52 x 66 ft in plan and sunk to Els —141 and —150 ft respectively. As floated in, these caissons were 110 ft high, another record-breaking achievement.

The two largest caissons will support the pivot piers for the twin 500-ft swing spans which will be the central feature of the 3,750 ft long superstructure. Anchored during sinking by four steel pipe towers 112 ft high held in position by 150 ft long spuds driven through the corner columns, the caissons will repay any itinerant engineer who can manage to make them a port of call. The contractors are the Massman Construction Co., and the Kansas City Bridge Co. The consulting engineers are Parsons, Brinckerhoff, Hall and Macdonald, of New York City, for whom Maurice N. Quade is the partner in charge and Roger B. Stevenson, resident engineer.

DELAWARE RIVER—Dredging from one of the 60 wells in the world's largest caissons.

CHESAPEAKE BAY — Bell-bottom caissons of this type will be used on 28 piers. They will rest on 135 ft H-piles.

YORK RIVER—Lowering a 112-ft tower through 80 ft of water as an anchor for one of the caissons. The first caisson towed in is in background.

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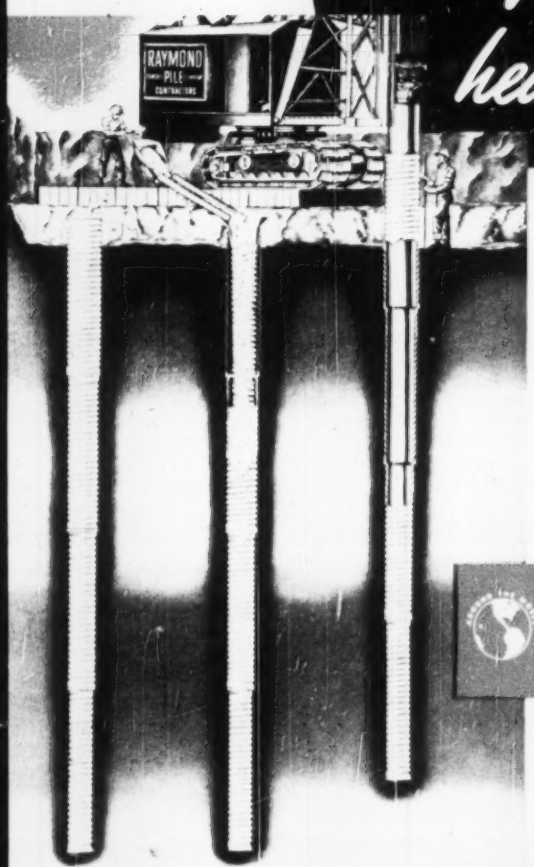

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